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HOMOLOGOUS SERUM JAUNDICE

A Problem in the Operation of Blood Banks

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Recognition is being given increasingly to the problem of hepatitis following the prophylactic or therapeutic administration of human blood and its products. Recent papers have described the clinical aspects of the disease and have reviewed the literature.[1] As yet, no method of prevention of homologous serum jaundice has been devised, and its relation to infectious hepatitis requires further clarification. The available evidence indicates that the icterogenic agent of both diseases is probably a virus.[1c]

The present paper has two purposes: first, to report cases of homologous serum jaundice which were observed during the year ending August 1945 in the Peter Bent Brigham Hospital in order to emphasize the importance of this disease, and second, to discuss the problem of serum jaundice and possible methods for its prevention in the operation of a hospital blood bank.

METHODS AND MATERIAL

A description of the operation of the blood bank which has been run jointly by the Children's Hospital and the Peter Bent Brigham Hospital will clarify the problems to be discussed. A brief history is taken from each donor, which is designed to exclude those with malaria, syphilis or an acute illness. Examination of the skin, mucous membranes, cardiovascular system and genitalia is supplemented by a hemoglobin determination, a serologic test for syphilis (Hinton) and blood groupings (including Rh factor). Approximately 500 cc. of blood are drawn aseptically into bottles which contain a solution of sodium citrate kept at 5 to 10 C. and used as whole blood, if needed, at any time during the ensuing five to ten days.[2] At the conclusion of this period the red cells are discarded and the plasma from ten to fifteen bottles is combined to make a pool. Each pool is numbered, a sample cultured, and a record made of the donors whose plasma it contains. The pool is then frozen and stored in the frozen state until needed—often for a year or more. When it is to be used, the plasma is thawed at 37 C. and divided into 250 cc. units. Often many weeks elapse between the administration of the first and last unit of a pool, during which time the plasma is kept at 5 to 10 C. The complete record of each pool contains the names of all patients who received plasma from it, as well as notes of any immediate reactions that were reported.

Homologous serum jaundice is a form of acute hepatitis which follows the receipt of human blood, plasma or some of its derivatives after an interval of forty to one hundred and eighty days. Three criteria were used in selecting the cases included in this report. First, each patient had received plasma and/or blood between fifty-four and one hundred and thirty-five days before the onset of jaundice. Second, in each instance the clinical observations were characteristic of acute hepatitis.[1f] Third, in the fatal cases the pathologic findings were those of fatal hepatitis.[3]

These cases were discovered in one of three ways. In some instances patients were admitted to the hospital with hepatitis, and the history of prior receipt of blood or plasma was elicited. Other patients had been in the hospital previously, and hepatitis was found to have developed subsequently by follow-up studies carried out either because of interest in the original disease or because these patients had received plasma suspected of being icterogenic. The third source was the discovery at autopsy of acute hepatic atrophy in a patient who had received plasma or blood.

The cases will be presented in three groups. The first comprises 5 persons whose disease may be traced to the same pool of plasma. In the second and third groups, comprising 3 fatal and 5 nonfatal cases respectively, plasma from a common pool was not a factor.

REPORT OF CASES OF HOMOLOGOUS SERUM JAUNDICE

A. Pool 219

Pool 219 was made of the plasma from blood collected in the spring of 1944. It was kept frozen until early in 1945 when, over the course of several months, it was administered to 9 patients, among whom 3 definite and 2 possible instances of hepatitis developed. Of the remaining 4 patients, 2 died of their original disease before sufficient time had elapsed to permit them to contract serum jaundice.

In 2 patients jaundice did not develop, although they survived their original disease. S. Dil. was a boy aged 21 months who received plasma from pool 219 and other

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[1] (*a*) Homologous Serum Jaundice: Memorandum by Medical Officers in the Ministry of Health, Lancet **1:** 83-88, 1943. (*b*) Neefe, J. R.; Miller, T. G., and Chor[illegible], F. W.: Homologous Serum Jaundice: A Review of the Literature and Report of a Case, Am. J. M. Sc. **207:** 638, 1944. (*c*) Paul, J. R.; [illegible]vens, W. P., Jr.; Sabin, A. B., and Philip, C. B.: Transmission Experiments in Serum Jaundice and Infectious Hepatitis, J. A. M. A. **[illegible]8:** 911-915 (July 28) 1945. (*d*) Rappaport, E. M.: Hepatitis Following Blood or Plasma Transfusions, ibid. **128:** 932-939 (July 28) 1945. (*e*) Grossman, E. B., Stewart, S. G., and Stokes, J., Jr.: Post Transfusion Hepatitis in Battle Casualties, and a Study of Its Prophylaxis by Means of Human Immune Serum Globulin, ibid. **129:** 991-994 (Dec. 8) 1945. (*f*) Hepatitis, editorial, Ann. Int. Med. **24:** 511-516, 1946.

[2] This was the procedure at the time the blood of pool 219 was collected. Since then the introduction of a new anticoagulant (trisodium citrate, 1.33 per cent; citric acid 0.47 per cent, and dextrose, 3 per cent) instead of sodium citrate has modified this procedure slightly.

[3] Lucke, B.: The Pathology of Fatal Epidemic Hepatitis, Am. J. Path. **20:** 471, 1944.

plasma and blood when he was in the Children's Hospital for treatment of a perforated appendix and generalized peritonitis. B. S. was a woman aged 71 with hypertensive cardiac disease and auricular fibrillation, who was admitted to the surgical service because of an embolus in a branch of the left femoral artery. She received 1 unit of pool 219 plasma during embolectomy. Six months after the discharge of the patient, no symptoms of hepatitis had developed.

The course of these 9 patients is summarized in figure 1, and the case histories of those in whom homologous serum jaundice developed follows:

Definite Cases of Homologous Serum Jaundice

Case 1.—B. H., a woman aged 28, a housewife, was originally admitted in December 1944 because of anuria following a reaction to a blood transfusion given for hemorrhage incident to an abortion. During this admission her liver and spleen were not palpable. For many days she was severely uremic, anemic and edematous, and she was given seven blood transfusions and plasma from nine pools, of which one was pool 219. She recovered and was discharged. Thirteen weeks (eighty-nine to ninety-four days) after receiving the plasma there developed nausea, anorexia, diarrhea and subcostal discomfort, and she entered the hospital for the second time. On physical examination slight icterus and a tender liver, which was barely palpable on deep inspiration, were noted. The leukocyte count was 7,400; the icteric index was 30; the serum bilirubin determination was 4.1 mg. per hundred cubic centimeters, and the prothrombin level was less than 10 per cent of normal. Her condition rapidly became poorer, and the icterus increased; she lapsed into coma and died six days after admission.

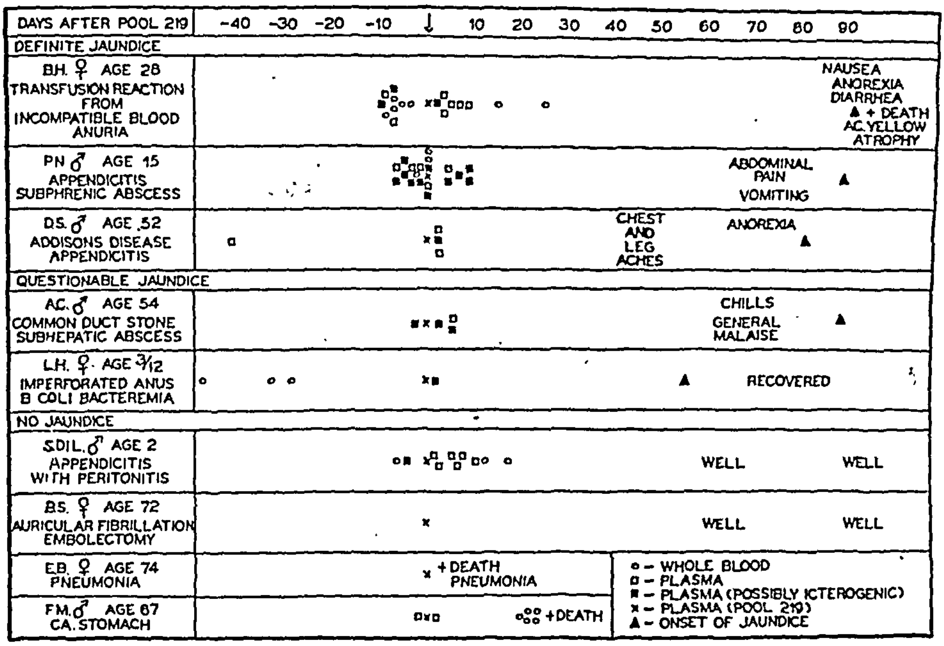

Fig. 1.—Homologous serum jaundice, pool 219.

At autopsy there was pronounced icterus. The liver weighed 1,050 Gm. and was flabby. The surfaces were smooth and a mottled greenish yellow-brown. The appearance of the cut surfaces of the liver was varied. Large areas, particularly in the right lobe, were pale yellow-brown, and the lobular markings were indistinct. In other large areas the sinusoids were bright red and prominent and the parenchyma between the sinusoids was pale yellow. There was no gross evidence of scarring or vascular damage.

Representative sections were fixed in Zenker's fluid and 10 per cent solution of formaldehyde and stained with eosin and methylene blue, Mallory's phosphotungstic acid and Mallory's aniline blue stains. There was complete destruction of the hepatic architecture. All liver cells appeared to be severely damaged, and the great majority were necrotic. The cells as a whole had a shrunken appearance, the boundaries of the cells were hazy or broken, the cytoplasm stained poorly and the nuclear outlines were indistinct. A few liver cells in the vicinity of the portal areas took a deeply basophilic stain. The cytoplasm of these cells was vacuolated and the nuclei pyknotic. No regenerating cells were seen. The biliary ducts were intact. In only an occasional canaliculus was there biliary stasis, and few ducts showed evidence of proliferation. There was moderate polymorphonuclear leukocytic infiltration in the portal and the immediate periportal areas. There was no evidence of repair or proliferation of connective tissue (fig. 2).

The gallbladder was the usual size and shape and contained 10 cc. of thin light brown bile. It was not thickened, and there were no stones. The spleen weighed 385 Gm. It was soft and flabby. Cut surfaces were reddish gray, and the malpighian bodies were prominent. On microscopic examination the splenic pulp was seen to be engorged with red blood cells. A small amount of hemosiderin was found throughout the splenic pulp.[4]

Case 2.—P. N., a schoolboy aged 15 who had catarrhal jaundice five years previously, was admitted to the surgical service on Jan. 11, 1945, with acute appendicitis and peritonitis. A subphrenic abscess and a sterile pleural effusion had developed following operation, and he received three blood transfusions and 17 units of plasma, of which 2 came from pool 219. He recovered completely. Early in April, after abdominal and midback pain and vomiting of one day's duration, he was admitted to the surgical service. Physical examination elicited only tenderness over the lower part of the abdomen. The leukocyte count was 15,800; the icteric index was 9, and the stool was brown. He went home well in two days. Thirteen weeks after receiving the plasma of pool 219 he noted anorexia, fatigue, weakness and mild itching of his hands. These symptoms were followed within three days by a temperature of 102 F. When he was admitted to the medical service April 21, 1945 he was moderately jaundiced; there was tenderness to percussion over his liver, which could not be felt, and a palpable spleen. The leukocyte count was 6,000; the icteric index was 50; the serum bilirubin level was 14.7 mg. per hundred cubic centimeters; the stool was brown and the urine contained bilirubin. He recovered uneventfully. About two weeks prior to the onset of jaundice he had been in the company of a girl who had been discharged from this hospital a month before following an attack of infectious hepatitis.

Case 3.—D. S., a man aged 52, of Italian birth, had Addison's disease. At the end of November 1944 he underwent operative intervention in this hospital for acute appendicitis and received 12 units of plasma. Thereafter he was well until Jan. 12, 1945, at which time he was admitted with an infection of the upper part of the respiratory tract and an addisonian crisis. He was given 5 units of plasma, of which 2 came from pool 219. He recovered rapidly but about six weeks later suffered from "chest and leg pains," which were apparently not severe enough to warrant seeking medical aid. Jaundice appeared in the first week of April, twelve weeks after he had received the plasma from pool 219. On admission on April 9 he was jaundiced, but the liver and spleen were not felt. The leukocyte count was 5,000; the icteric index was 25; the serum bilirubin determination was 5.9 mg. per hundred cubic centimeters; the prothrombin level was normal; the stool was brown, and the urine contained bilirubin. His hospital course and convalescence were uneventful.

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[4] This case is being reported in full elsewhere by Burwell, E. L.; Kinney, T. D., and Finch, C. A.: Renal Damage Following Intravascular Hemolysis, *New England J. Med.*, to be published.

Questionable Cases

CASE 4.—A. C., an Italian man aged 54 entered the hospital because of three weeks of increasing jaundice. Abdominal exploration was performed, and his pancreas was removed. At this time he received blood and plasma, including 2 units from pool 219. Pathologically, the pancreas showed a well differentiated, slowly growing adenocarcinoma with a decided degree of fibrous stroma. The jaundice of the patient subsided. In May 1945, eighty-five to ninety-two days after the plasma from pool 219 was given, jaundice reappeared. Physical examination revealed normal conditions save for icterus; his leukocyte count was 6,800; his icteric index, 20, and his serum bilirubin, 2.5 mg. per hundred cubic centimeters. Although his jaundice diminished, he soon began to have recurrent episodes characterized by chills, reappearing jaundice and leukocytosis during the next six months. Finally a second laparotomy was carried out, and a stone was found in the common bile duct. Cholangiograms at this time showed moderate dilatation of all the intrahepatic biliary ducts. The jaundice slowly cleared and the stools became brown, although some bile continued to drain from the wound. During the next six months the patient grew progressively sicker, and two subdiaphragmatic abscesses were drained. He was admitted on May 17, 1946 because of weakness, vomiting and a bloody discharge from his abdominal incision. Icterus increased rapidly, and the patient died July 9, 1946.

At autopsy pronounced generalized icterus was present. There was edema of the extremities and over the sacrum. A total of 5,800 cc. of clear amber fluid was found in the peritoneal cavity. All the structures in the right upper quadrant of the abdomen were bound together by dense, firm, white adhesions. An abscess containing light green pus was found between the diaphragm and the right lateral margin of the liver. The liver weighed 960 Gm. The capsule, except where it was involved in adhesions or inflammatory reaction, was smooth and green-brown. The left lateral and anterior edges of the left lobe were firm, white and fibrotic. Occasional small, firm, white tumor nodules were scattered throughout the liver. Sections of the liver were green-brown, and thin, white purulent matter exuded from both large and small biliary ducts. The portal vein just proximal to the splenic vein was decidedly constricted by the dense adhesions in this area. The gallbladder was thickened, surrounded by adhesions and contained pus. The common duct was partially obscured by adhesions, and its opening into the jejunum could not be identified. The head and adjacent body of the pancreas had been removed, as had the first and second portions of the duodenum. The remaining pancreatic tissue showed definite softening and atrophy.

Microscopic sections of the liver disclosed a pronounced increase in fibrous tissue in the portal areas, with decided lymphocytic infiltration. There was an acute cholangitis and pericholangitis with stasis of the bile and some proliferation of the biliary duct. The tumor nodules were made up of well differentiated adenocarcinoma. The gallbladder showed chronic cholecystitis. There was complete disappearance of the acinar tissue of the pancreas, with only a few islets and large ducts present in the scar tissue. Well differentiated adenocarcinoma was found in sections of the scar tissue from the regions near the site of the head of the pancreas.

In the light of the preceding history, the attack of jaundice in May 1945 cannot be definitely diagnosed as homologous serum jaundice, although it is equally impossible to state that the patient did not have this disease at that time. The latter is true because the jaundice appeared between the eighty-fifth and ninety-second day after the administration of the icterogenic plasma and the low white blood cell count and clinical course were consistent with those of homologous serum jaundice. At autopsy the conditions observed in the liver were those that are associated with long-standing biliary obstruction with superimposed infection. However, this would not invalidate the assumption that the patient had had homologous serum jaundice, as little or no residual stigmas are found in the liver after recovery from homologous serum jaundice.

CASE 5.—L. H., a baby girl aged 3½ months, was admitted on Sept. 25, 1944 for repair of a colostomy and intra-abdominal adhesions resulting from an operation for imperforate anus at an outside hospital. She had to have four abdominal operations, including an ileostomy, because of repeated bouts of intestinal obstruction; she received six transfusions of plasma and eleven of blood up to Jan. 31, 1945, at which time she was given 50 cc. of plasma from pool 219 and, on the following day, a like amount from pool 191. Fifty-six days later, on March 27, 1945, jaundice developed and another exploratory operation was performed. Many adhesions were found, which accounted for the symptoms of intestinal obstruction. The gallbladder was somewhat distended, but no definite evidence of biliary obstruction was discovered. Two weeks later her jaundice had disappeared, and the child did well until August 1945, when there developed diarrhea, then bacteremia and meningitis due to Escherichia coli. She died Aug. 25, 1945.

At autopsy the body was that of a normally developed and fairly well nourished white female infant. There were multiple operative scars over the abdomen and extensive fibrous adhesions throughout the peritoneal cavity. An ileostomy and ileo-ileal side to side anastomosis were patent. The proximal two thirds of the small intestine was greatly distended. There was an acute and chronic enteritis. The liver weighed 370 Gm. (normal weight, 304 Gm.) and was of normal size, color and consistency. The cut surfaces showed normal lobular architecture with scattered areas of yellow mottling. Microscopic sections of the liver showed slight lymphocytic infiltration in the portal spaces. There was moderate vacuolization of hepatic cells in the periportal regions. Hemosiderin was found in macrophages in the portal areas and in the Kupffer cells. In places the sinusoids were dilated and the hepatic cell cords narrowed. The gallbladder was completely encased by fibrous tissue, which could be dissected from it with ease, but the gallbladder itself was not abnormal. The biliary ducts were patent and of normal caliber. The spleen was normal. In addition to the preceding observations the patient had an acute focal meningitis due to Aerobacter aerogenes; acute and chronic bronchitis, and pulmonary edema.

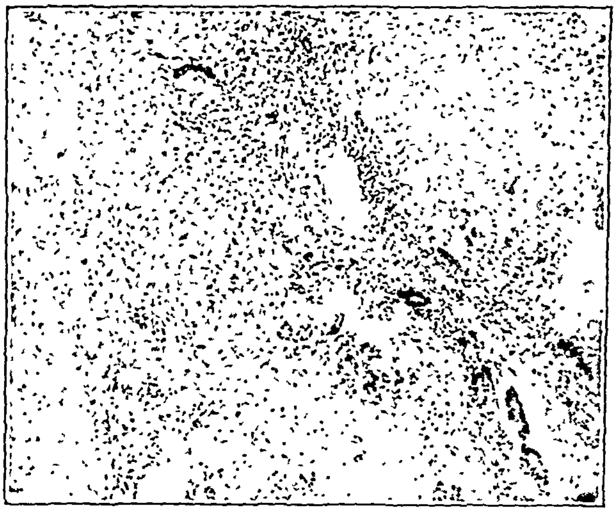

Fig. 2.—Photomicrograph showing extensive hepatic cell damage and loss of structure; eosin and methylene blue stain.

B. Other Fatal Cases

CASE 6.—J. F. L., a man aged 59, was admitted in September 1944 with diabetes mellitus and symptoms of cholelithiasis for twenty years. On admission his liver was palpable 4 fingerbreadths below the costal margin, but the spleen could not be felt. Gallstones were demonstrated roentgenologically, and a cholecystectomy was performed on Oct. 19, 1944; the gallbladder, containing stones, was found to be bound down by adhesions. The intestine protruded after operation; a wound abscess developed at the edge of the liver, and the patient exhibited transient auricular fibrillation. Between October 20 and November 20 he received 20 units of plasma and four transfusions of whole blood. He was discharged improved.

On Jan. 20, 1945 he reentered with anorexia, nausea, vomiting and fever of ten days' duration. The physical observations were unchanged. The leukocyte count was 12,400; the icteric index was 51; the alkaline phosphatase measured 9.4 Bodansky units; the stool was brown with a 2 to 3 plus guaiac reaction, and urinalysis was positive for bilirubin. In the hospital the patient grew steadily worse. The icteric index rose to 100 and the white blood cell count climbed to 24,000, although the stools remained brown and the prothrombin level, normal. Nausea and vomiting were intractable, coma developed and ascites collected, requiring a paracentesis. The jaundice had appeared sixty-one days after the last and ninety-two days after the first of the many plasma infusions of the patient.

At autopsy the body was decidedly icteric. There was a sinus tract from which thin green fluid could be expressed, running from the upper edge of the healed cholecystectomy incision to the site of the gallbladder. The gallbladder had been completely removed, and its place was taken by dense scar tissue. There was 5,500 cc. of clear yellow-green fluid present in the peritoneal cavity.

The liver weighed 2,080 Gm. and was soft and flabby. The external surface was slightly granular and mottled yellow-green. Cross sections of the liver showed large focal areas in which there was pronounced congestion of the inusoids. Here the parenchyma of the liver was green and extremely soft with indistinct lobular markings. Elsewhere the sinusoids were not so prominent and the parenchyma was a homogeneous yellow-green, firm in consistency; the lobules appeared to be divided by a delicate gray network. In still other, but smaller, regions the liver was deep red-blue and soft in consistency, and there was complete loss of structure. The common duct was patent. Microscopic examination showed great destruction of the hepatic parenchyma. Many liver cells had disappeared, and there were either broad areas of hemorrhage or bands of homogeneous young fibrous tissue between the remaining cells. There was diffuse polymorphonuclear leukocytic infiltration. The remaining cells were well outlined, with homogeneous basophilic cytoplasm which showed only occasional vacuolization. The nuclei were round and regular with distinct chromatin networks, though occasional cells contained several nuclei, suggesting regeneration. Single, homogeneous, round, deeply acidophilic bodies, of the size of liver cells, were seen. Pigment-laden Kupffer cells were prominent. There was no evidence of dilatation of the biliary ducts or of biliary stasis. Proliferation of the biliary ducts was well defined throughout the scarred areas. The findings in the liver were not considered to be compatible with changes resulting from disease of the gallbladder or obstruction of the common duct but were considered to be consistent with the lesions found in homologous serum jaundice. The spleen weighed 200 Gm., was soft and flabby and dull red-gray. Microscopic examination showed decided congestion of the pulp with red blood cells.

Case 7.—J. P. M., a man aged 55, was admitted in June 1944 because of hemorrhage from a duodenal ulcer of eighteen years' duration. On physical examination, a sharp nontender hepatic edge was felt 2 fingerbreadths below the costal margin. The prothrombin level was normal, but there was 30 per cent sulfobromophthalein sodium retention in thirty minutes with an initial dose of 5.7 mg. per kilogram of body weight. Eight days later a subtotal gastrectomy was performed. At operation the "liver appeared free from disease and the gallbladder appeared normal," according to the surgeon. Between June 27 and July 26, 1944 the patient received 6 units of plasma and 2,500 cc. of whole blood. He was discharged August 5, but on Sept. 2 he was readmitted because of three days of postprandial diffuse abdominal pain, together with vomiting and obstipation. The temperature was 101.5 F.; the pulse rate was 90; there was slight icterus and a tense abdomen. The leukocyte count was 9,000; the icteric index was 10; the stool was black, and the prothrombin time was 70 seconds with a control of 55 seconds. He was febrile and his jaundice deepened during the thirteen days that he remained alive. The leukocyte count was low until the fourth day (6,200) and rose to 25,000 four days before death. The stools became tan and then gray with a 4 plus guaiac reaction, and there was bilirubinuria. Massive ascites appeared, and fluid obtained by paracentesis a week before death had a specific gravity of 1.012 and was sterile to culture. Jaundice had appeared thirty-eight days after the last and sixty-six days after the first infusion of plasma.

At autopsy the body was decidedly icteric. There was 1,000 cc. of pale yellow fluid in the peritoneal cavity. The liver weighed 1,340 Gm. and was soft, flabby and pale yellow. Cross sections were homogeneously yellow, and the usual lobular markings were absent. Microscopic sections, prepared as described previously, showed complete loss of hepatic structure. Almost all the liver cells were necrotic. There was extensive diffuse polymorphonuclear leukocytic infiltration. An occasional small island of liver cells which appeared to be regenerating was found. Round acidophilic bodies, similar to those seen in the cast of J. F. L. (case 6) were found in the areas of greatest destruction. There was active proliferation of the biliary ducts. A few fibroblasts were present, but there was no increase in scar tissue. The gallbladder and extrahepatic ducts were not remarkable. The spleen weighed 100 Gm., and appeared normal on gross and histologic examination.

Case 8.—C. H., a woman aged 68, was admitted on May 2, 1945 because of acute intestinal obstruction. She had noticed rectal bleeding for two years, and for three weeks before admission she had complained of crampy abdominal pain. On physical examination there was tenderness in the left lower quadrant of the abdomen, and a mass was felt on rectal examination. The spleen and liver could not be palpated. At laparotomy, performed May 7, acute intestinal obstruction together with reduplication and diverticulitis of the sigmoid was found. The "liver looked not . . . abnormal" to the surgeon. A transverse colostomy was made; a month later a partial left colectomy was performed, and on July 5 the colostomy was closed. At that time the liver and gallbladder again appeared normal. The patient received plasma on May 5, 6, 7 and 10 and 500 cc. of whole blood on June 7. There was an uneventful convalescence, and the patient returned home.

Suddenly, on July 31, there was pain in the right upper quadrant of the abdomen and fibrillary twitching of the face and extremities appeared. The liver was not palpable. Twelve hours later light icterus was seen, and forty-eight hours after the onset the patient produced coffee-ground vomitus. By August 2 the icteric index was 190 and she was unconscious; on August 4 she died. Jaundice had appeared eighty-three days after the last infusion of plasma, eighty-eight days after the first and fifty-five days after her only whole blood transfusion.

The autopsy was performed at another hospital. The liver weighed approximately 650 Gm., was decidedly shrunken with a wrinkled capsule, and was soft, flabby and mottled yellow and red. A histologic section examined in this hospital showed changes similar to those described in the previous cases, complete destruction of liver cells with diffuse leukocytic infiltration. The biliary ducts were intact, and in a few regions there was evidence of proliferation. There were no other significant observations.

C. Other Nonfatal Cases

Case 9.—A. F., a man aged 49 years, received 1 unit of plasma in July 1944 while undergoing prostatectomy for benign prostatic hyperplasia. After discharge he suffered from vague abdominal complaints. Ten weeks after the administration of the plasma he passed darkly colored urine, and several days later jaundice and symptoms of hepatitis appeared. On readmission his liver was palpable. The icteric index reached 119 with a simultaneous prothrombin level of less than 30 per cent. Thereafter the jaundice gradually diminished, and the icteric index was 19 seven weeks after the onset of the illness.

CASE 10.—J. F. M., a man aged 57, suffered severe and continued intestinal hemorrhage during an attack of typhoid fever treated in this hospital in July and August of 1944. Twenty-one transfusions of whole blood (11 liters) and 2 units of plasma were given in a period of ten days. He recovered, and when seen four and a half months later in the follow-up clinic related that about seven weeks after the transfusions he had had hives for several days, and that two to three weeks later he noted jaundice, fatigue, anorexia, nausea and vomiting, dark urine and putty-colored stools. He improved without medical care but felt tired for a month. In the follow-up clinic, two months after this illness, his liver was palpable 2 fingerbreadths below the costal margin, but this had also been noted when he had typhoid fever. The icteric index was 11, and a sulfobromophthalein sodium test (5 mg. per kilogram of body weight) showed no retention of the dye in his serum after thirty-five minutes.

CASE 11.—J. H., a man aged 28, suffered from both Addison's disease and diabetes mellitus and had been admitted to this hospital about once a month for over two years. On Oct. 8 and 9, 1944 he received 550 cc. of plasma incident to a tooth extraction. He was admitted three times during November and December for treatment of his primary diseases and required plasma (3 units) on December 27 and 28. About Feb. 7, 1945 he passed dark urine; two weeks later nausea, vomiting, anorexia and jaundice appeared; he was readmitted February 27. On physical examination a smooth and nontender liver was felt 2 fingerbreadths below the costal margin, an observation not previously noted, but his spleen was not palpable. On February 28 the leukocyte count, normally low in this patient, was 4,550, with 33 per cent polymorphonuclear leukocytes and 54 per cent lymphocytes. The icteric index was 40; the stool was brown, and the sulfobromophthalein excretion curve showed abnormally high retention. By April 12 the icteric index had fallen to 15, with a leukocyte count of 7,200 and an almost normal sulfobromophthalein sodium excretion curve. From the date of administration of plasma in October to the onset of jaundice, one hundred and thirty-four or one hundred and thirty-five days had elapsed; from the time plasma had been given to him in December until the appearance of jaundice there had been an interval of fifty-four or fifty-five days.

CASE 12.—C. S., a woman aged 67, was admitted May 8, 1945 because of rectal bleeding. On physical examination the liver was just palpable, and a hard mass was felt protruding into the rectal canal. On May 22 a combined abdominal-perineal resection was carried out for carcinoma of the rectum, and that day she received 250 cc. of plasma and 3 units of whole blood. Only slight nausea and anorexia followed the operation, but at the end of June vomiting became severe; between June 28 and July 8 she required 10 units of plasma. Because the vomiting continued until mid-July, a gastrointestinal series of roentgenograms was made, which demonstrated a duodenal ulcer with pyloric obstruction. On July 21, sixty days after the first infusions of plasma but less than twenty-three days after the last, she appeared jaundiced and the icteric index was 47. By July 28 it was 66; the leukocyte count was 5,100, the serum bilirubin, 12.8 mg. per hundred cubic centimeters, and the alkaline phosphatase, 14.5 Bodansky units. Thereafter the patient gradually improved.

CASE 13.—J. D., a man aged 38, was admitted to the surgical service May 19, 1945 because of epigastric pain, nausea and vomiting of five hours' duration. His leukocyte count was 29,000. At laparotomy he was found to have a malrotated cecum with a perforated retrohepatic appendix, although the liver itself appeared normal. During convalescence dehiscence of the wound occurred and he was extremely ill, requiring 10 units of plasma between May 20 and 25. He was discharged June 15. About July 20 he noted anorexia, nausea and headache, and in the following five days dark urine, clay-colored stools and jaundice appeared. When admitted to the medical service August 1, no history of alcoholism, prior hepatic symptomatology or exposure to hepatitis could be elicited. On physical examination, tenderness under the right costal margin was found and neither liver nor spleen was palpated. The temperature was normal; the leukocyte count was 10,000, and the icteric index 78, with a serum bilirubin of 19.1 mg. per hundred cubic centimeters. Tenderness of the right upper quadrant of the abdomen continued for a week; the jaundice became more pronounced, and the patient suffered from transient itching. The liver was never felt. The incubation period from the receipt of plasma to the onset of jaundice was sixty-four to sixty-nine days.

COMMENT

A. Criteria and Cases

There is no confirmatory diagnostic aid which will differentiate homologous serum jaundice from infectious hepatitis. The criteria by which these cases were selected suggest that the former diagnosis was correct but do not prove that the disease was not infectious hepatitis. Moreover, the majority of these patients were over 30 years of age, whereas infectious hepatitis usually occurs in younger persons.

The cases related to pool 219 have the greatest likelihood of being homologous serum jaundice. In 3 of the 7 recipients who lived long enough to have icterus develop it did so, while jaundice, which could have been due either to hepatitis or to obstruction of the biliary ducts, occurred in 2 of the other 4 patients two to three months after receiving the plasma. The incubation period between transfusion and the onset of icterus was remarkably constant, eighty-four to ninety-four days, and is consistent with that given in other reports.[5] While it is true that the recipients in whom jaundice developed had also received blood and/or plasma in addition to that from pool 219, it is in relation to the date on which the plasma from the latter pool was given that the constancy of the incubation period is found. This fact is particularly apparent in case 3; D. S. had received plasma from other pools seven weeks prior to the administration of that from pool 219. Two of the 3 patients had brief periods of illness before the onset of jaundice, which is characteristic of many serum jaundice cases.[6] Finally, P. N.'s history (case 2) of prior "catarrhal jaundice" suggested that his present disease was homologous serum jaundice, for second attacks of infectious hepatitis (catarrhal jaundice) are uncommon,[1b] and an attack of this disease probably does not confer immunity to homologous serum jaundice.[7]

B. Source of Icterogenic Agent

Among donors to an icterogenic plasma pool, at least 1 might be expected to have had a history of jaundice. In investigating the cases of jaundice in the United States Army which followed immunization with yellow fever vaccine made with human serum, Sawyer and his associates[8] concluded that all "highly icterogenic" lots (lots associated with more than 10 cases of jaundice per 1,000 doses net issue) contained some serum from persons with a history of jaundice. After the readmission of patients with jaundice related to pool 219, the 15 donors to this pool were investigated more closely than had been done at the time their blood was taken. All were contacted in person or by mail and were asked if they recalled ever having had jaundice or any illness in the past three years. Specific inquiry with reference to other symptoms of infectious hepatitis was made. They were asked if they had ever received blood or plasma transfusions, or injections of serums or vaccines, and a family and contact history with respect to jaundice was secured.

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[5] Sawyer, W. A.; Meyer, K. F.; Eaton, M. D.; Bauer, J. H.; Putnam, P., and Schwentker, F. F.: Jaundice in Army Personnel in the Western Region of the United States and Its Relation to Vaccination Against Yellow Fever, Am. J. Hyg. **39**: 337-430, 1944. Paul, Havens, Sabin and Philip.[1c]

[6] Neefe, J. R.; Stokes, J., Jr.; Reinhold, J. G., and Lukens, F. D. W.: Hepatitis Due to the Injection of Homologous Blood Products in Human Volunteers, J. Clin. Investigation **23**: 836-856, 1944.

[7] Darmady, E. M., and Hardwick, C.: Syringe-Transmitted Hepatitis, Lancet **2**: 106, 1945. Oliphant, J. W.: Infectious Hepatitis: Experimental Study of Immunity, Pub. Health Rep. **59**: 1614-1616, 1944. Neefe, Miller and Chornock.[1b] Hepatitis, editorial.[1f] Neefe, Stokes, Reinhold and Lukens.[6]

[8] Sawyer, W. A.; Meyer, K. F.; Eaton, M. D.; Bauer, J. H.; Putnam, P., and Schwentker, F. F.: Jaundice in Army Personnel in the Western Region of the United States and Its Relation to Vaccination Against Yellow Fever, Am. J. Hyg. **40**: 35-107, 1944.

Twelve of the 15 donors gave completely negative responses to these inquiries. Of the remaining 3, 1 woman aged 29 had had repeated episodes of jaundice throughout her life until her spleen was removed in 1939; pathologic examination of the spleen had confirmed the clinical diagnosis of congenital hemolytic icterus. The second, a man aged 33, was in the Merchant Marine at the time the investigation was carried out, but it was learned from his wife that he had had one brief episode of jaundice three years before he gave his blood. The third man, 30 years of age, was a Navy student at Harvard University at the time of his donation. He had received yellow fever vaccine (lot 1229) in December 1943, but this lot was prepared without human serum. More important, in May 1944, a few weeks after his donation of blood, he reported "loss of appetite, nausea, soreness in the right thoracic region, just at the last rib, yellow stools, easy fatigability and nervousness." He did not recall any jaundice. At that time a roentgen examination of his gallbladder was made at a naval hospital and was reported to have revealed normal conditions. He added that at "the present time (March 1946) I occasionally have similar reactions, especially the soreness and nausea." These symptoms are strongly suggestive of hepatitis, for this can occur without jaundice.[9] Either of these last 2 donors may have been the source of the icterogenic agent of pool 219.

TABLE 1.—*Transfusion Record in Eleven Cases of Homologous Serum Jaundice*

Case	Whole Blood	Plasma	Plasma Pools	Suspicious Plasma Pools *	Suspicious Pools, Pool Nos.
1. B. H. (fatal)........	7	11	9	6	137, 175, 196, 219, 223, 235
2. P. N.	3	17	11	7	135, 137, 169, 174, 182, 219, 235
3. D. S.	0	12	9	3	180, 191, 219
4. A. C. (questionable)	2	6	5	3	135, 169, 219, 223
5. L. H. (questionable)	11	8	8	2	191, 219
6. J. L. (fatal)........	4	20	10	3	174, 175, 180
7. J. P. M. (fatal).....	6	6	5	1	213
8. O. H. (fatal)........	1	5	4	0	
9. A. F.	0	1	1	0	197
10. J. F. M.	21	2	2	1	213
11. J. H.	0	5	3	2	196, 260
12. O. S.	3	11	7	2	245, 260
13. J. D.	0	10	7	3	182, 235, 245

* Suspicious because jaundice developed in more than 1 patient who received plasma from these pools.

C. Incidence and Mortality

Incidence: *If three months is assumed to be the average incubation period of homologous serum jaundice, the 11 patients whose cases are presented in this report received their infectious plasma or blood between June 1944 and May 1945. In this period of a year, 1,494 units of blood and 949 units of plasma were given to patients in the hospital, and a minimum estimate of* the incidence of the disease would therefore be 1 in every 222 transfusions. For the true incidence it would be necessary to follow up all recipients. Case 10, that of J. F. M., shows that some attacks of homologous serum jaundice are so mild that medical assistance is not sought and only follow-up studies will uncover them. This is a huge task. It is probable that as a result of the pooling procedure plasma is much more apt to produce jaundice than is whole blood; the minimum incidence would be 1 in every 86 transfusions of plasma if all these cases resulted from plasma.

That this is actually so is strongly suggested by recent reports from Britain,[10] in which the incidence of jaundice within five months of transfusion was nil in 891 patients who received whole blood and 7.3 per cent in 1,054 patients who received serum or plasma. This higher incidence of the disease in England probably is the result of two factors: first, the larger number of bleedings (from 120 to 800) per pool; and second, the careful follow-up of every recipient. The comparative frequency of icterogenic donors in Britain and the United States as well as the comparative susceptibility of the recipients also may be quite different. These authors were presumably dealing with liquid plasma and serum, whereas the plasma we use has been kept in the frozen state until shortly before its administration.

As a consequence of pooling, even in those instances where a patient who is known to have hepatitis is a recipient of a particular pool and serves as the starting point, the epidemiologic problem is complex. If 1 recipient of a pool contracts jaundice, the determination of the incidence and source of infection in that pool requires the investigation of all the other recipients and all the donors—about 12 of each in our blood bank. A further complication is that most patients who receive plasma require multiple transfusions of plasma and often of blood, thus implicating more than one pool; 10 of the 11 patients here reported received multiple transfusions. Thus, to complete the study of a patient with homologous serum jaundice who has been given plasma from four pools would necessitate contacting roughly 40 to 50 donors and 40 to 50 recipients. Table 1 illustrates this complexity.

What is the risk of homologous serum jaundice to a patient given plasma? The answer to this important question cannot be given at present but should depend on the number of pools from which the patient receives plasma, the number of donors contributing to each pool and the incidence of infectious donors in the community. Sawyer and his colleagues[8] found that 23 of 367 donors gave a history of jaundice and suggested that as high as 6 per cent of the population might be periodic carriers. Lots of homologous blood products which are definitely icterogenic vary greatly in the incidence of jaundice following their administration. Fox and his collaborators[11] proposed that a second etiologic factor must be present in addition to the primary agent in the blood product. They suggested that this second factor might be another infectious agent, chronic intoxication of the liver or lowered hepatic resistance of an alimentary nature. In table 2 are given the diseases which antedated the receipt of the presumably icterogenic plasma and which might have caused hepatic damage in the patients considered in this report and in those recipients of pool 219 who escaped subsequent hepatitis. Most of the patients who contracted jaundice suffered from serious intra-abdominal disease or conditions like Addison's disease or typhoid fever, in which nutrition is affected.

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[9] Barker, M. H.; Capps, R. B., and Allen, F. W.: Chronic Hepatitis in the Mediterranean Theater: A New Clinical Syndrome, J. A. M. A. **129**: 997-1003 (Aug. 4) 1945. Paul, Havens, Sabin and Philip.[12]

[10] Spurling, N.; Shone, J., and Vaughan, J.: Homologous Serum Jaundice, Brit. M. J. **1**: 409-413, 1946.

[11] Fox, J. P.; Manso, C.; Penna, H. H., and Para, M.: Observations on the Occurrence of Icterus in Brazil Following Vaccination Against Yellow Fever, Am. J. Hyg. **36**: 68-116, 1942.

That serum jaundice, like most other infectious diseases, is milder in children is also suggested by the fact that none of our cases except the questionable instance of S. Dil., who received plasma from pool 219, have been recognized in the Children's Hospital, where a considerable amount of the plasma has been used.

Mortality: The mortality in homologous serum jaundice is variable. It has been reported as about 0.2 per cent.[12] in the Army during the outbreak from yellow fever vaccine, as 2 per cent [11] in a Brazilian outbreak with similar vaccine and as 22 per cent in a group of infections following the use of measles serum in England.[1a] In our series the mortality of 36 per cent is abnormally high, since the true incidence of the disease, as just pointed out, is higher than that reported here because only the severer cases came to our attention in the hospital. The number of fatal cases included is high because observations at autopsy served as a source of cases.

D. Methods of Control

Measures designed to prevent homologous serum jaundice may be divided into two categories. The first, with the advantage of immediate applicability, are concerned with the operation of the hospital blood bank and may be expected to diminish the incidence of the disease but not to abolish it. The second comprise possible methods of future control.

1. Methods of Immediate Applicability: In the operation of the blood bank greater efforts should be made to detect the infectious donors; the practice of pooling plasma should be curtailed, and lots of plasma should be given to as few recipients as possible. It is doubtful whether all infectious donors can be found until more is known of the disease itself. However, the examination of donors should include procedures which will uncover the following types of persons, whose blood in our opinion should not be used.

History: any person who has (1) ever had jaundice or hepatitis; (2) had contact with a person with jaundice in the past year;[13] (3) received human blood or its derivatives prophylactically or therapeutically in the past year,[13] except products of plasma fractionation, or (4) been a hospital patient in the past year.[14]

Physical examination: any person who has (1) fever, (2) icterus, or (3) an enlarged or tender liver, or enlarged spleen.

Laboratory examination: any person who has bilirubinuria or hyperbilirubinemia.

Such procedures will detect some nonicteric instances of hepatitis. Neefe, Stokes and their associates [6] closely observed 9 volunteers who had been given inoculations of infective serum and uncovered clinical and laboratory evidence of hepatic dysfunction before jaundice appeared. Of a number of laboratory tests used, they found the detection of bilirubinuria and the retention of sulfobromophthalein sodium the most reliable. Simple tests for bilirubinuria have recently been described, which are of value in detecting infectious hepatitis as early as six days prior to jaundice.[15]

The present procedure at the blood bank at the Peter Bent Brigham Hospital is to determine the serum bilirubin level of any unit of plasma which appears yellow and to discard those units in which the serum bilirubin level is elevated. The fact that blood is infectious for a number of weeks before jaundice develops raises the possibility of holding plasma two or three months and checking donors before using it. A sterile sample of the plasma of each donor whose blood or plasma is used in the bank might be retained for at least a year after his blood or plasma has been administered, in the hope that study of samples from donors of icterogenic blood might lead to better methods for their detection. (Such procedures are worthy of study but not applicable as a routine.)

TABLE 2.—*Possible Sources of Hepatic Damage Prior to Receipt of Plasma or Blood*

Summary of the factors which might have caused hepatic injury in those patients who later contracted hepatitis probably due to plasma or blood. (Also included are those recipients of plasma from pool 219 who survived without contracting hepatitis.)

Case	Recipients of Plasma from Pool 219	Incubation Period, Days
1. B. H.	Pregnancy; abortion; transfusion reaction	89 to 94
2. P. N.	Peritonitis; subphrenic abscess; "catarrhal jaundice" 5 yrs. before	91
3. D. S.	Addison's disease	84
4. A. C.	Jaundice; ? cholelithiasis..........	86 to 93 (questionable jaundice)
5. L. H.	Chronic recurrent intestinal obstruction	56 (questionable jaundice)
S. Dil.	Peritonitis	Jaundice did not develop
B. S.	None: hypertensive cardiovascular disease	Jaundice did not develop
	Recipients of Plasma from Other Pools	
6. J. L.	Cholelithiasis; recurrent jaundice; diabetes mellitus; abscess at edge of liver after cholecystectomy; liver palpable	61 to 92
7. J. P. M.	Peptic ulcer with hemorrhage; palpable liver; 30 per cent sulfobromophthalein retention	38 to 66
8. C. H.	Diverticulitis; reduplication and obstruction of sigmoid	83 to 83
9. A. F.	None: benign prostatic hyperplasia	About 70
10. J. F. M.	Typhoid fever; palpable liver.....	About 65 to 70
11. J. H.	*Addison's disease; diabetes mellitus*	*54 to 55 or 134 to 135*
12. C. S.	Rectal carcinoma; pyloric obstruction; duodenal ulcer	60
13. J. D.	Retrohepatic appendicitis; perforated appendix	64 to 69

The basis for condemning the practice of pooling plasma is the fact that the amount of infective serum necessary to produce the disease is incredibly small. It has even been suggested that small amounts may be more effective in producing the disease than large volumes.[1a] The findings of Sawyer and his associates [8] indicated that an amount of icterogenic serum of the order of 0.01 to 0.001 cc. is all that is needed to transmit hepatitis. Therefore, if each donor's contribution to a pool is 250 cc. (250,000 infective doses if 0.001 cc. is the minimum effective dose) increasing the size of pools should increase the incidence of jaundice. Hence, pools should be kept as small as possible. If pooling is completely eliminated and plasma from 1 donor is administered to only 1 recipient, then an infective donor can cause, at most, 1 case of homologous serum jaundice. The elimination of pooling would necessitate radical changes in the operation of blood banks, one of which would be the requirement that plasma should be typed and cross matched, or treated with group-specific substances.[16] The allocation of a particular pool to a particular patient until there is no chance of his needing more plasma would cut down on the multiple chances for infection resulting from the present random system of distribution.

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[12] Outbreak of Jaundice in the Army, Circular Letter 95, Office of the Surgeon General, Washington, D. C., 1942, J. A. M. A. **120**: 51-54 (Sept. 5) 1942. Hepatitis, editorial.[1r]

[13] The period of a year is arbitrarily selected as the longest period practicable without seriously hampering the operation of the bank.

[14] This is to exclude donors who might have been infected by the procedures for taking blood samples or giving hypodermic injections which are routinely used in most hospitals, and which may transmit the disease. Hepatitis Transmitted by Syringe, Current Comment, J. A. M. A. **128**: 668 (June 30) 1945. Also see footnote 17.

[15] Gellis, S. S., and Stokes, J., Jr.: *The Methylene Blue Test in Infectious (Epidemic) Hepatitis*, J. A. M. A. **128**: 782-783 (July 14) 1945. Hawkinson, V.; Watson, C. J., and Turner, R. H.: A Modification of Harrison's Test for Bilirubin in the Urine Especially Suited for Mass and Serial Usage, ibid. **129**: 514-515 (Oct. 13) 1945. Watson, C. J., and Hawkinson, V.: Semiquantitative Estimation of Bilirubin in the Urine by Means of the Barium-Strep Modification of Harrison's Test, J. Lab. & Clin. Med. **31**: 914-915, 1946.

2. *Methods of Future Control*: Possible methods of prevention of homologous serum jaundice in the future may be sought along two lines: treatment of the blood or blood product or treatment of the recipient.

The infective principle is extremely rugged. It resists storage in the frozen and dried state, filtration, a temperature of 56 C. for one hour, exposure for months in mediums containing 0.5 per cent each of phenol and ether or 0.2 per cent tricresol and ether extraction.[17] Oliphant and Hollaender have found that the exposure of icterogenic serum in a specially constructed apparatus to ultraviolet light of 2,537 Å may reduce the icterogenic capacity of the serum decidedly.[18] The products of plasma fractionation [19] do not seem to transmit the icterogenic agent.[20] Since these fractions are specific and superior agents for many purposes for which human plasma and serum are employed, their use instead of the latter might be the most effective preventive. Moreover, the use of whole blood should be encouraged for the treatment of traumatic shock, since it is not only probably safer than plasma from the point of view of homologous serum jaundice but also a more physiologic and effective replacement fluid.

Attempts have been made to reduce the incidence of homologous serum jaundice by the intramuscular administration of the gamma globulin fraction of human plasma [21] to the recipients of blood or plasma. The evidence gathered to date [22] does not show conclusively that such treatment is as effective as in infectious hepatitis, but further studies are needed.

CONCLUSIONS

1. Homologous serum jaundice is a disease which must be seriously considered in the operation of a hospital blood bank and in the use of pooled human plasma from any source. In the Peter Bent Brigham and Children's hospitals, over a one year period a minimum estimate is that approximately one in every two hundred plasma or blood transfusions was followed by the disease. If, as is more likely, almost all the infections were the result of the transfusion of pooled plasma, preserved in the frozen state, the minimum incidence was one in every eighty-six plasma transfusions. The criteria for selecting our cases have been presented. Four of these cases were fatal, representing an unexpected late sequel of an original illness from which the patient had apparently recovered.

2. Two methods of control may be immediately instituted in the operation of a blood bank: (1) better detection of possible infective donors by history and physical and laboratory examination, and (2) elimination of the practice of pooling plasma or reduction of the size of pools to a minimum, with limitation of the number of recipients of plasma from each pool as far as possible.

3. Methods of control which may be of value in the future are: (1) the ultraviolet irradiation of plasma or serum; (2) the use of whole blood and the products of plasma fractionation rather than plasma, and (3) the administration of gamma globulin to recipients of plasma or blood.

SUMMARY

1. Eleven cases of hepatitis which was probably due to the prior infusion of human plasma or blood were observed in the course of a year in which 2,443 transfusions of blood and plasma were given.

2. Methods for control of this disease in civilian hospitals include better detection of infectious donors, reduction in the size of plasma pools and elimination of the practice of administering a particular pool to mutiple recipients. The use of whole blood and plasma fractionation products in preference to pooled plasma should be encouraged.

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[16] Witebsky, E.; Klendshoj, N. C., and Swanson, P.: Preparation and Transfusion of Safe Universal Blood, J. A. M. A. **116**: 2654-2656 (June 14) 1941.

[17] Role of Syringes in the Transmission of Jaundice: Memorandum by Medical Officers in the Ministry of Health, Lancet **2**: 116-119, 1945.

[18] Oliphant, J. W., and Hollaender, A.: Homologous Serum Jaundice: Experimental Inactivation of Etiologic Agent in Serum by Ultraviolet Irradiation, Pub. Health Rep. **61**: 598-602, 1946.

[19] Cohn, E. J.; Oncley, J. L.; Strong, L. E.; Hughes, W. L., Jr., and Armstrong, S. H., Jr.: Chemical, Clinical, and Immunological Studies on the Products of Human Plasma Fractionation: I. The Characterization of the Protein Fractions of Human Plasma, J. Clin. Investigation **23**: 417-433, 1944.

[20] Janeway, C. A.: Unpublished data.

[21] Enders, J. F.: Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation: X. The Concentration of Certain Antibodies in the *Globulin Fractions Derived from Human Blood* Plasma, J. Clin. Investigation **23**: 510-531, 1944.

[22] Stokes, J., Jr., and Neefe, J. R.: The Prevention and Attenuation of Infectious Hepatitis by Gamma Globulin, J. A. M. A. **127**: 144-146 (Jan. 20) 1945. Grossman, Stewart and Stokes.[16]

ENDOCRINE THERAPY IN CARCINOMA OF THE PROSTATE

Preparation of Patients for Radical Perineal Prostatectomy

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As soon as the efficacy of the endocrine management of carcinoma of the prostate, whether by orchiectomy, the administration of estrogens or a combination of the two had been established by numerous observers, chiefly through the fundamental investigations of Herbst [1] and of Huggins,[2] carefully compiled studies soon became available concerning the extent of regression of the primary neoplasm and its metastases following the various types of therapy. From extensive reviews of statistics to date, as well as from experience gained in treating 200 patients with prostatic cancer at the Brady Urological Institute by the administration of diethylstilbestrol, we have come to expect objective regression of the primary growth in approximately 75 per cent of the cases and of its metastases in approximately 45 per cent.

In our clinic we have found it advantageous to classify cases of prostatic carcinoma into four main groups:

I. Early, in which the malignant process is confined to the gland itself and is therefore admirably suited for radical extirpation.

II. Moderately advanced, in which the growth has spread into the bases of the seminal vesicles, into the apex of the gland, or both.

From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore.

Read before the annual meeting of the American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 22, 1946.

[1] Herbst, W. P.: Estrogen in Carcinoma of the Prostate, J. A. M. A. **124**: 385 (Feb. 5) 1944.

[2] Huggins, C.: Summary of Endocrine Effects in Advanced Prostatic Cancer, New York State J. Med. **43**: 519-521 (March 15) 1943; Treatment of Cancer of the *Prostate*.[3]

III. Advanced, in which, on initial examination, there exists obvious extension throughout the region of the seminal vesicles, inferolateral ligaments and membranous urethra and with fixation of the outer layers of the rectum.

IV. Metastatic: metastases may occur in all three of the aforementioned groups but are, of course, most commonly seen in group III.

During the past three years we have encountered a number of cases in group II which have responded so satisfactorily to diethylstilbestrol therapy that radical surgery subsequently has been undertaken in order to afford these patients the chance of a complete cure. It is with the management of these cases, which may properly be classified as moderately advanced, that this paper is primarily concerned.

THE ACTION OF DIETHYLSTILBESTROL

The mode of action of the endocrines in prostatic cancer is not yet completely understood, nor has the question of diethylstilbestrol therapy versus castration been settled. It is apparent, however, that the actively growing malignant cells require androgen for their viability, and when it is denied them, as after orchiectomy or when it is neutralized, as seems to occur after the administration of diethylstilbestrol, these cells undergo certain changes which can be demonstrated histologically and chemically. As Huggins[3] has stated, "androgen control seriously disturbs the enzyme mosaic of the cancer cells, at least with respect to the important energy-producing protein-catalysts, the phosphatases. As a contribution to the general problem of cancer treatment, it is well to emphasize that any interference with an important enzyme system of a cell, normal or malignant, will cause in that cell a decrease of size and function."

The cytologic changes in the cancer cells following diethylstilbestrol therapy have been intensively studied by Kahle and others.[4] These observers were able to demonstrate definite regressive changes in the nuclear and cytoplasmic material. These changes consist at first of pyknosis of the nuclei and vacuolization of the cytoplasm. Later there occur progressive fragmentation and disappearance of nuclear material, rupture of cell membranes, loss of cellular outline and finally replacement by fibrous stroma, smooth muscle and round cells.

The fact that recrudescence usually occurs after varying lengths of time has been adduced by most observers as evidence that the cancer cells are not actually destroyed but simply remain dormant until becoming reactivated.[5] However, it is common clinically to note that, despite extensive and progressing metastatic manifestations elsewhere during the administration of diethylstilbestrol, the prostate itself remains soft, even atrophic, and in many instances the diagnosis of carcinoma cannot be made by subsequent rectal palpation. Moreover, from a histologic standpoint, as shown by Kahle and others, it would seem that actual cell death had occurred following diethylstilbestrol therapy.[4]

Clinically, after the administration of estrogens one notes in about 75 per cent of the cases a generalized softening of the primary neoplasm associated with a shrinkage in size. These changes are variable, and this variability may be related to the histologic pattern of the tumor, as has been suggested by some, or to the total dosage of estrogen employed. In those patients in whom the carcinoma by rectal palpation is classified as moderately advanced (group II), we have gained the impression from serial examinations during diethylstilbestrol treatment that the earliest signs of regression appear in the periphery of the growth. This has led to the supposition that possibly the marginal cells are more actively growing and therefore show the effects of androgen deprivation more acutely than do those located nearer the center.

Whatever the explanation, the clinical observation has been that, under the influence of diethylstilbestrol, the cancerous process first seems to recede out of the bases of the seminal vesicles and apex of the prostate. This observation has been responsible for our feeling that patients with what has hitherto been considered inoperable prostatic cancer can be given the possible opportunity of cure by radical surgical excision following adequate estrogenic preparation.

THE RADICAL OPERATION

From the insidious nature of the growth of carcinoma of the prostate, it is obvious that early diagnosis is extremely difficult and, in the majority of cases, when the diagnosis is first made the primary neoplasm has extended beyond the capsule into the contiguous structures. The actual percentage of cases deemed suitable for radical surgical removal varies in different clinics. Prince and Vest[6] performed the operation on 9 per cent of patients with prostatic cancer examined at the University of Virginia in a period of two years. In an earlier study[7] it was found that 22.7 per cent of all patients admitted to the Brady Urological Institute between 1937 and 1942 with a diagnosis of carcinoma of the prostate were subjected to radical surgery. The latter percentage is higher than ordinarily would be expected because numerous patients in whom a diagnosis of early carcinoma had been made elsewhere were referred to this clinic in the hope that they could be cured by the radical operation. However small the actual figure, it must be borne in mind that those patients who fulfil the conditions for radical extirpation must not be denied the chance of cure by this method.

It is well to review the clinical criteria for radical surgery in carcinoma of the prostate:

1. On rectal palpation the growth must not extend beyond the capsule into the bases of the seminal vesicles or the region of the membranous urethra. The gland must be freely movable, since fixation indicates spread into the periprostatic tissues.

2. No demonstrable metastases must be present. Acid phosphatase estimates are helpful in many cases but often may remain at normal levels in the presence of extensive metastatic lesions.

3. The patient must be a good surgical risk, and his life expectancy should be reasonable. It is doubtful whether patients in the eighth or ninth decades should

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[3] Huggins, C.: Treatment of Cancer of the Prostate, Canad. M. A. J. **50**: 301-307 (April) 1944

[4] Schenken, J. R.; Burns, E. L., and Kahle, P. J.: The Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland: II. Cytologic Changes Following Treatment, J. Urol. **48**: 99 112 (July) 1942. Kahle, P. J.; Schenken, J. R., and Burns, E. L.: Clinical and Pathological Effects of Diethylstilbestrol and Diethylstilbestrol Propionate on Carcinoma of the Prostate Gland, ibid **50**: 711-732 (Dec.) 1943.

[5] Barringer, B. S.: Prostatic Carcinoma, J. Urol. **47**: 306-310 (March) 1942.

[6] Prince, C. L., and Vest, S. A.: Carcinoma of the Prostate, South. M. J. **36**: 680 685 (Oct.) 1943.

[7] Colston, J. A. C.: Carcinoma of Prostate: Study of Percentage of Cases Suitable for Radical Operation, J. A. M. A. **122**: 781-784 (July 17) 1943.

be submitted to the operation, especially in view of the essentially slow growing characteristics of the tumor in these older persons.

RESULTS

The postoperative results of the radical operation at the Brady Urological Institute have been reviewed in detail in earlier publications.[8] It has been pointed out that the operative mortality ranges between 5 and 6 per cent, a figure which compares very favorably with the results of surgery performed for the cure of cancer elsewhere in the body. In the last series of cases reported there occurred 4 hospital deaths in a total of 73 radical prostatectomies done from 1937 to 1942, a mortality percentage of 5.5. Since 1942 there has been only 1 death directly attributable to operation. There are several reasons for the progressive reduction in mortality since 1904, when Young performed the first radical perineal prostatectomy for cancer. These include better methods of hemostasis, including the liberal use of blood transfusions, as well as chemotherapy and the antibiotics. The use of spinal anesthesia has provided better relaxation of the perineal musculature, thus materially improving the technic and shortening the duration of the operation.

THE PREOPERATIVE ADMINISTRATION OF DIETHYLSTILBESTROL

The preparation of patients for radical perineal prostatectomy by the use of diethylstilbestrol has been recommended before,[9] and Vallett[10] has reported a case in which the radical operation was successfully performed after castration.[10] Hitherto, however, no reports have appeared in the literature where a series of cases so managed has been carefully followed and studied from that standpoint. At the Brady Urological Institute 200 cases of cancer of the prostate have been treated with diethylstilbestrol, in all of which the ary neoplasm was considered too extensive on examination to justify radical extirpation. The ses reported here were classified as moderately advanced on rectal examination. All were then maintained on diethylstilbestrol therapy for varying periods, during which time serial rectal examinations were performed. The response of each of these patients to the administration of estrogen was so gratifying that it was deemed worth while to perform the radical operation in order to attempt a complete eradication of the disease. In several other patients similar regression occurred, but their general physical condition and life expectancy contraindicated extensive radical procedures.

In the 7 patients submitted to radical prostatectomy, the preoperative dosage of diethylstilbestrol was 1 to 2 mg. per day. No essential difference in the rapidity or degree of regression of the primary neoplasm has been noted with larger doses. The use of diethylstilbestrol in the dosage recommended has not been attended by untoward symptoms, save for slight swelling and tenderness of the nipples, and, as the growth has receded very satisfactorily on this dosage, larger amounts have not been employed.

REPORT OF CASES

Case 1.—J. E. A., a white man aged 68, first examined Nov. 9, 1943, presented increased urinary difficulty, moderate frequency and nocturia one to four times of one year's duration. He gave no history of back or perineal pain or apparent weight loss. He had been examined elsewhere six weeks previously, at which time a small, hard, oval nodule had been discovered in the right lobe of the prostate. He had therefore been referred here for possible radical perineal prostatectomy.

Physical examination revealed that the patient was in good condition. The penis showed moderately advanced induration of the corpora cavernosa (Peyronie's disease). The scrotal contents were normal. On rectal examination the prostate was slightly broader than normal. Both lateral lobes were irregular and contained areas of stony hard induration, more pronounced on the right. There was evidence of extension to the apex of the prostate and region of the membranous urethra. Both seminal vesicles were palpable but not indurated. There was no x-ray evidence of bony metastases. The acid phosphatase was normal.

Because of the extension of the disease toward the apex, the condition was considered unfavorable for radical cure at that time. Therefore the patient was begun on diethylstilbestrol 1 mg. per day and maintained on this regimen for almost seven months. During this time serial rectal examinations showed progressive shrinkage and softening of the neoplasm.

On May 27, 1944 the patient was readmitted and prepared for operation. Laboratory studies showed hemoglobin 96, white blood cells 6,100, phenolsulfonphthalein excretion 65 per cent in two hours. The urine was normal except for an occasional white blood cell; culture was sterile.

May 29 a radical perineal prostatectomy was carried out, followed by an uneventful convalescence.

Pathologic studies showed adenocarcinoma of the prostate and involvement of the bases of both seminal vesicles.

The patient was discharged from the hospital on the twenty-ninth postoperative day, voiding a good stream with perfect control. On the last visit, one year after operation, the patient was found to be in good general condition with no evidence of local recurrence or distant metastases. He was passing a stream of good caliber and force.

Case 2.—K. H. B., a white man aged 59, first seen Feb. 3, 1944, came here after a diagnosis of carcinoma of the prostate had been made elsewhere and orchiectomy advised. There was no history of urinary symptoms, weight loss or pain. Previous x-ray studies had been negative for metastases, and acid phosphatase was normal.

On examination the patient was found to be in good condition. The external genitalia were negative. The prostate was slightly broader than normal, fixed, irregular and stony hard throughout. There was evident extension into the apex as well as into the bases of both seminal vesicles.

Radical extirpation was thought to be contraindicated at that time, and the patient was placed on diethylstilbestrol 2 mg. per day. This was maintained for approximately two months. During this time serial rectal examinations demonstrated such satisfactory regression of the carcinomatous process that it was thought advisable to carry out radical perineal prostatectomy. Laboratory studies showed hemoglobin 13.3 Gm., white blood cells 5,600, blood urea 20 mg., phenolsulfonphthalein excretion 75 per cent in two hours. The urine was normal; culture was negative.

April 12, 1944 radical perineal prostatectomy was done. Convalescence was uneventful except for one febrile rise after passage of a sound. The patient was discharged twenty-three days after operation, voiding well and with good control.

Pathologic sections showed extensive adenocarcinoma of the prostate with involvement of the bases of both seminal vesicles.

Four days after leaving the hospital the patient had acute urinary retention and was treated elsewhere for a stricture at the site of anastomosis. A suprapubic cystostomy was done and a urethral catheter left in place. The tube was removed five days later, and the patient was able to void satisfactorily. At the present time the voided stream is free and urinary control satisfactory. The patient has now resumed full activity. He frequently plays eighteen holes of golf a day and experiences no urinary leakage whatever. However, at the end of an especially strenuous day, the patient occasionally notices slight dribbling.

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[8] Young, H. H.: The Cure of Cancer of the Prostate by Radical Perineal Prostatectomy, J. Urol. **53**: 188-252 (Jan.) 1945. Colson, J. A. C.: Surgical Removal of Cancer of the Prostate Gland: Radical Operation, J. A. M. A. **127**: 69-72 (Jan. 13) 1945.

[9] Colston, J. A. C., in discussion on papers by Huggins and McDonald, Rathbun and Nesbit and others, Tr. Am. A. Genito-Urin. Surg. **37**: 235-236, 1944. Parlow, A. L.: Advanced Cancer of Prostate: Consideration of Value of Radical Prostatectomy in Selected Cases, New York State J. Med. **45**: 383-386 (Feb. 15) 1945.

[10] Vallett, B. S.: Radical Perineal Prostatectomy Subsequent to Bilateral Orchiectomy, Delaware M. J. **16**: 19-20 (Feb.) 1944.

Case 3.—Dr. W. N. F., a white man aged 61, a physician, was first examined at the Brady Urological Institute Feb. 11, 1944. In the course of a general physical examination elsewhere the prostate was observed to be hard and irregular. The patient was followed periodically for several months. A bilateral orchiectomy was advised and, on the suggestion of a colleague, he came to the Brady Urological Institute. No nocturia was noticed at any time, and only slight hesitancy. There was no history of pain or weight loss. The patient had a long history of alcohol addiction.

On physical examination the patient was in good general condition. The external genitalia were normal. There was a small, reducible hernia present at the right external ring. Rectal palpation showed the prostate to be moderately broader than normal. It was irregular, indurated and stony hard throughout. The right lobe was especially prominent. The induration had extended into the apex of the prostate and up into the bases of both seminal vesicles. There was no x-ray evidence of metastases. Acid phosphatase studies were normal.

Although the growth had not spread beyond the confines of the capsule, it was thought to be too extensive at that time to insure a complete cure by radical operation. For this reason diethylstilbestrol 2 mg. a day was advised. Rectal examination six weeks later revealed definite regression of the neoplasm both in size and in degree of induration.

The patient was readmitted March 28 and prepared for radical operation. Laboratory studies revealed hemoglobin 12 Gm., white blood cells 5,200, blood urea 20 mg. per hundred cubic centimeters, phenolsulfonphthalein excretion 82 per cent in two hours. The urine was normal; cultures were sterile.

On April 7 a radical perineal prostatectomy was carried out followed by a completely uneventful convalescence except for slight leakage after removal of the urethral catheter on the fourteenth postoperative day. The patient left the hospital nineteen days after operation, voiding well and with good control.

Pathologic studies showed extensive adenocarcinoma of the prostate involving the bases of both seminal vesicles.

Two months later symptoms of urinary difficulty developed, and he required several efforts to empty his bladder. Urinary control, however, was excellent.

He was reexamined July 11. No evidence of local recurrence or distant metastasis was found. However, a stricture had developed at the site of the anastomosis. The residual urine was 30 cc. The patient therefore was readmitted to the hospital and the stricture dilated under spinal anesthesia. He was discharged after several days, voiding an excellent stream and with normal control.

Case 4.—C. E. H., a white man aged 60, first examined at the Brady Urological Institute on March 24, 1944, was referred by his physician, who had followed him for about one year because of increased urinary difficulty and hesitancy as well as an enlarged, rather hard prostate. There had been no history of back or perineal pain and no weight loss.

On physical examination the patient seemed to be in good general condition. The external genitalia were normal. On rectal examination the prostate was moderately broader than normal and especially prominent on the right side. The right lobe was of stony hard induration, especially toward its outer edge and well down toward the apex. The left lobe was firm but not of third degree. The seminal vesicles were thickened but not involved. The growth had apparently extended beyond the capsule on the right side, and particularly into the membranous urethra. Residual urine was 85 cc. There was no x-ray evidence of metastases.

Radical operation was thought to be unjustified because of the extent of the malignant process. The patient therefore was started on diethylstilbestrol 1 mg. per day. He was seen again one month later, at which time he was voiding with considerably less difficulty. Definite regression of the neoplasm had occurred. Diethylstilbestrol was continued another month, and at the end of that time on rectal examination it was difficult to detect any areas of stony hardness or make a gross diagnosis of carcinoma.

The patient was readmitted May 23, 1944 and prepared for radical perineal prostatectomy. Laboratory studies disclosed hemoglobin 100, white blood cells 8,500, blood urea 28 mg. per hundred cubic centimeters, phenolsulfonphthalein excretion 85 per cent in two hours. The urine contained a trace of albumin and 4 to 5 white blood cells. May 24 radical perineal prostatectomy was carried out and followed by an uneventful convalescence. The urethral catheter was removed on the fourteenth postoperative day. The patient voided an excellent stream and remained dry perineally. Pathologic studies showed carcinoma of the prostate not involving the seminal vesicles. It was predominantly adenocarcinoma in type, with a multiplicity of form and showing diethylstilbestrol changes. The patient was discharged nineteen days after operation, voiding well and with good control.

After returning home he did well for about fourteen months. At that time he noticed some diminution in the size and force of the stream. He was reexamined Sept. 6, 1945 and found to be in excellent general condition. There was no evidence of local return of the cancer or distant metastases. A soft stricture at the site of the anastomosis was easily dilated, following which the patient developed acute retention. He was hospitalized twenty-four hours and discharged voiding easily with normal control.

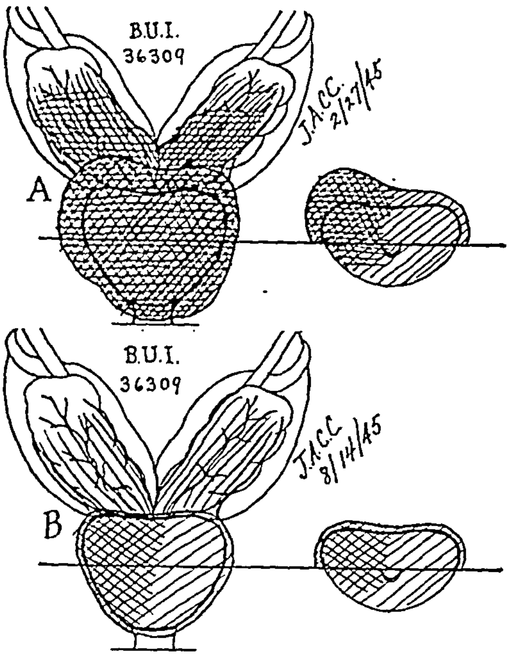

Fig. 1 (case 5).—*A*, diagrammatic representation of rectal findings on initial examination. *B*, six months after institution of diethylstilbestrol.

Case 5.—M. W., a white man aged 68, was first examined at the Brady Urological Institute Feb. 27, 1945. For the preceding year he had suffered from vague gastrointestinal symptoms manifested chiefly by gaseous distention. His local physician had discovered a suggestive nodule in the prostate and referred him to a urologist, who diagnosed carcinoma of the prostate but considered the process too extensive for radical operation. The patient was referred to this clinic. He had no history of any urinary symptoms whatever. Rectal examination disclosed the prostate to be considerably broader than normal. The left lobe was nodular and of stony hard induration, and there was nodularity of the right lobe, which also was stony hard but not quite so prominent as the left. The bases of both seminal vesicles were invaded, particularly on the left (fig. 1 *A*). There was no x-ray evidence of bony metastases. The serum acid phosphatase studies were normal.

The initial impression was that the growth was too extensive for radical operation. Diethylstilbestrol 1 mg. a day was started. When seen six months later a most remarkable change in the palpatory findings had occurred. The gland was only slightly broader and was more prominent than normal. No nodules were present, and the elevation on the left side had disappeared. The entire gland was elastic and compressible and not adherent. The vesicles and the base of the bladder above the gland were quite soft (fig. 1 *B*). Another x-ray again demonstrated no evidence of metastases.

The patient was readmitted Aug. 15, 1945 and prepared for radical perineal prostatectomy. All laboratory findings were negative. August 17, radical perineal prostatectomy was performed. The convalescence was smooth. The urethral catheter was removed the eleventh postoperative day, following which all urine drained by way of the perineum until reinsertion of the catheter on the seventeenth postoperative day. The catheter was finally removed the twenty-second day, after which the perineum remained completely dry. For the first three days the patient was almost totally incontinent, but at the end of that time he regained control gradually, so that when he was discharged on the twenty-sixth postoperative day he was voiding a normal stream with excellent control.

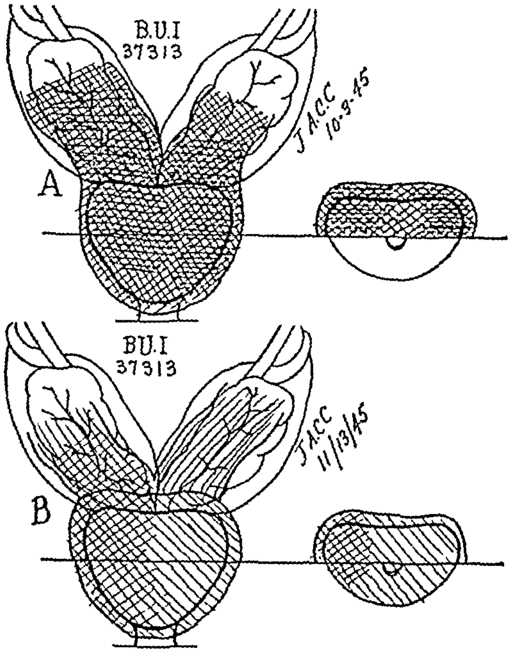

Fig. 2 (case 7).—*A*, diagrammatic representation of rectal findings on initial examination. *B*, six weeks after institution of diethylstilbestrol.

Pathologic studies showed adenocarcinoma of the prostate involving the bases of both vesicles, chiefly the left, with scattered areas of diethylstilbestrol change.

The patient has not been seen since, but a letter from him one month after operation stated that he was in excellent health and voiding satisfactorily.

Case 6.—E. R., a white man aged 62, first seen March 1, 1945, had a history of onset of urinary difficulty and frequency one year prior to the first examination. Six months before examination he had been seen elsewhere and had been treated periodically by urethral sounds and posterior urethral irrigations.

The patient was in good general condition. The external genitalia were normal. On rectal palpation there was evidence of third degree induration and nodularity throughout the prostate, but chiefly on the right side, with infiltration of the perirectal tissues over an area 1.5 cm. in diameter on the right side. Except for this the carcinomatous process seemed to be confined within the capsule of the prostate. There was no x-ray evidence of metastases. No serum acid phosphatase studies were obtained. The patient was placed on diethylstilbestrol 2 mg. per day. On this medication he developed some tenderness and soreness of the nipples, but there was some lessening in frequency and nocturia. The stream was perhaps slightly better. He was again examined May 31, 1945, at which time the prostate felt distinctly smaller. The left lobe was slightly larger than normal, smooth and elastic throughout, and of second degree induration. In the lower portion of the left seminal vesicle there was induration, but the remainder felt soft. The membranous urethra was uninvolved, and the rectal mucosa smooth.

The patient was admitted to the hospital June 2, 1945. General physical examination was essentially negative. Preoperative laboratory studies included hemoglobin 13, 7 Gm.: white blood cells 13,550, blood urea 20 mg. per hundred cubic centimeters, phenolsulfonphthalein excretion 75 per cent in two hours. Urine was normal.

On June 11 radical perineal prostatectomy was carried out. At operation there was obvious extension into the tip of the right seminal vesicle and laterally to the pelvic wall on the right side. After removal of the prostate and seminal vesicles there apparently still remained some neoplastic tissue on the right side. Postoperatively the patient had a smooth convalescence. The urethral catheter was removed on the fourteenth postoperative day, following which the patient voided an excellent stream with good control. On the sixteenth postoperative day he suddenly developed a left hemiparesis, which manifested itself as a seventh nerve palsy and decided motor loss of the left arm and leg. This cleared rapidly after about two weeks and was considered to have originated on an angiospastic basis. The patient was discharged on the thirty-fifth postoperative day, voiding satisfactorily with excellent urinary control.

Pathologic studies showed adenocarcinoma of the prostate with considerable anaplasia and with some diversity of the histologic pattern.

The patient was seen three weeks after leaving the hospital. A soft stricture at the site of the anastomosis was easily dilated. He was again seen after another three weeks period and found to be voiding a good stream with normal control. The patient died in May 1946. His physician said that he could feel some evidence of malignancy on rectal examination.

Case 7.—Dr. W. T. B., a white man aged 70, a physician, was admitted to the Brady Urological Institute Oct. 3, 1945 complaining of nocturia and burning on urination for approximately three to four years. He had been referred by his own physician, who had discovered a hard nodule in the prostate on rectal examination.

On physical examination the patient seemed to be in excellent general condition. The external genitalia were entirely normal. On rectal examination the prostate was somewhat broader than normal. Both lateral lobes were irregular and stony hard throughout, with the induration extending into both seminal vesicles, particularly on the left side (fig. 1 *A*). Laboratory studies revealed hemoglobin 14 Gm., white blood cells 9,600, blood urea 20 mg., phenolsulfonphthalein excretion 73 per cent in two hours. The urine contained 8 to 10 white blood cells per high power field; cultures were sterile. There was no x-ray evidence of bony metastases.

It was believed that, although this could be classed as a moderately advanced carcinoma of the prostate which had extended into both seminal vesicles, the radical operation should be deferred in the hope that following a course of diethylstilbestrol, the growth would regress sufficiently to permit an easier operative procedure and insure a better functional result. The patient was discharged and placed on diethylstilbestrol 2 mg. per day.

He was readmitted to the Brady Urological Institute for the second time on Nov. 13, 1945. Rectal examination disclosed the prostate to be only slightly broader than normal. The right lobe was smooth and firm but elastic and compressible throughout. The left lobe contained no evidence of stony hardness and was also smooth and compressible (fig. 2 *B*). There had been a very definite and gratifying response to diethylstilbestrol therapy. It was decided that the patient was now suitable for radical operation. Preliminary laboratory studies revealed hemoglobin 14.2 mg., white blood cells 8,700, blood urea 20 mg. per hundred cubic centimeters. The voided urine contained 4 to 6 white blood cells per high power field.

Nov. 14, 1945, radical perineal prostatectomy was carried out The postoperative course was *entirely uneventful.* The urethral catheter was removed the twelfth postoperative day, following which the patient voided a good stream with excellent control. The patient was *discharged sixteen days after operation,* to be followed by his own physician

Pathologic studies showed adenocarcinoma of the prostate, fairly well differentiated, *with involvement of both seminal* vesicles

Several weeks after leaving the hospital the patient developed acute retention and was seen by a urologist elsewhere who, after several dilations, performed a transurethral resection Following this procedure the patient became totally incontinent, but this condition has *gradually improved, so that he now has* no nocturnal leakage but has to wear a clamp during his surgical activities, which he has resumed

SUMMARY

Endocrine therapy in the treatment of carcinoma of the prostate, either by the administration of estrogen or by orchiectomy or by a combination of the two, has been proved by many competent observers to have a definite and most valuable place in the treatment of carcinoma of the prostate. Regression of the primary growth, as measured by rectal examination, has been noted to occur in approximately 75 per cent of the cases, and regression of metastases in 45 per cent. It has been postulated that this inhibitive effect results from an interference with the enzyme balance by endocrine therapy, and probably this effect is more pronounced on the younger, actively growing cells of the tumor, which are more dependent on androgen for their metastases. In spite of the intensive laboratory studies and many clinical observations that have been made on endocrine therapy of carcinoma of the prostate, no case has yet been reported in which complete disappearance or clinical cure has been obtained by endocrine therapy alone. From the results of experimental laboratory work and clinical research, it would appear at present that a permanent cure with endocrine therapy of carcinoma of the prostate cannot be obtained.

The regression of the prostatic growth which occurs in an appreciable percentage of cases under endocrine therapy has led us to follow a series of 7 cases in which on first examination the growth was considered too far advanced for complete extirpation by radical operation. In these 7 cases it was considered that the regression of the neoplasm as far as could be judged by rectal palpation had progressed to a sufficient degree to permit, the radical operation which was successfully carried out in these cases. There has been no operative mortality in this series, but 2 patients have developed complications resulting from stricture formation at the site of the anastomosis. One patient has died of recurrence and metastases one year after operation.

The patients in this series have all been operated on within the last two years, so that the presentation is in no sense intended as a study of ultimate mortality.

It is our impression that endocrine therapy for the preparation of patients to undergo the radical operation is of the utmost value in that:

1. We have observed numerous cases of moderately advanced carcinoma of the prostate in which orchiectomy or transurethral resection has been advised in the belief that the disease was too far advanced for radical extirpation.

2. Regression of the growth, which usually occurs, materially facilitates the operative technic in moderately advanced cases.

3. It is our hope that five year cures will be obtained in some of the cases in which on physical examination the observer's opinion was that the prognosis for radical cure was unfavorable.

In view of the regression of the primary growth which usually occurs in cancer of the prostate following endocrine therapy and which is attributed to death of at least some of the malignant cells, presumably at the periphery of the lesion, it would seem advisable to institute endocrine therapy in all cases of carcinoma of the prostate, even those which fulfil the criteria for the radical operation.

ORTHOPEDIC CAUSES OF PELVIC PAIN

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This paper presents the problem of pelvic pain in a deliberately simplified form. My purpose is to show that measurements of pelvic mobility are essential to an accurate diagnosis.

The fundamental structure of the pelvis consists of bones, muscles and joints. The massive ring formed by the two innominate bones and the sacrum gives origin and insertion to the most powerful muscles in the body; muscles that go far afield for attachment to other bones. The intrapelvic sacroiliac joints and symphysis pubis allow the bony ring to change its shape. The extrapelvic hip joints, sacrolumbar and sacrococcygeal joints allow motion of other bones on the pelvic ring. The ligaments of the pelvic joints are tremendously strong and are elaborately arranged in all planes, so that the slightest change in the position or shape of the pelvic ring alters the total ligamentous tension.

Flexion and extension are the normal motions of the intrapelvic joints (fig. 1). The sacrum may flex or extend on the ilia at the sacroiliac joints. The axis of sacral motion is a horizontal, transverse line that passes through the ligamentous portions of the sacroiliac joints and the body of the second sacral vertebra. Sacral flexion increases the lumbar lordosis, narrows the pelvic inlet and enlarges the outlet: sacral extension reverses the process. Furthermore, either innominate bone may flex or extend on the other at the symphysis pubis. The axis of innominate motion is a horizontal, transverse line that passes through the center of the symphysis. Innominate flexion by elevating the ilium produces lateral tilting of the sacrum and by carrying the ilium forward produces rotation of the sacrum toward the opposite side: innominate extension reverses the process. Abnormal motion may occur when the symphysis pubis is relaxed or torn, allowing a small amount of opposed flexion and extension of the innominate bones at the hip joints. Abnormal motion appears in appropriate roentgenograms as a vertical shift at the symphysis pubis.[1]

The curve of intrapelvic mobility is high at birth, goes down slightly during childhood and rises to a peak at puberty. During adult life the curve gradually descends, and it remains at a low level during old age. Age and other factors, such as training and build, influence articular mobility in general, but the action

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Read in a symposium on "Pelvic Pain" before the joint meeting of the Section on Obstetrics and Gynecology and the Section on General Practice of Medicine at the Ninety Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946

[1] Chamberlin, W. E: *The Symphysis Pubis in the Roentgen Examination of the Sacro Iliac Joint,* Am J. Roentgenol. **24:** 621, 1930.

of the female sex hormones on the intrapelvic joints is more specific. The puberty peak is higher in women than in men, and the subsequent descent is more gradual. There is a minor peak before each menstrual period, and the peak at parturition is approximately twice the height of the puberty peak. The return to normal mobility after delivery parallels the curve of uterine involution. The flexion-extension range of the innominate bone varies between 2 and 30 degrees. The average range in young, adult males is 5.5 degrees.

The intrapelvic joints have three functions: stability in weight-bearing; mobility in child-bearing and the reflex maintenance of balance. Stability is the most important of the three, and complete bony ankylosis of the intrapelvic joints affords a good illustration. In ankylosis stability is maximal, mobility is nil and the intrapelvic joint sense of position and movement is lost. Yet if fusion has occurred in normal alignment there may be no interference with parturition or balance. The function of mobility is relatively unimportant, even in a difficult delivery, but excessive mobility is a handicap because it interferes with stability and balance. Aching joints and clumsiness are commonly found in pregnancy and adolescence as the results of excessive mobility. The part played by the intrapelvic joints in the reflex maintenance of balance is extremely important, as long as the joints are movable. When motion ceases, as in ankylosis, the function of balance passes on to adjacent structures.

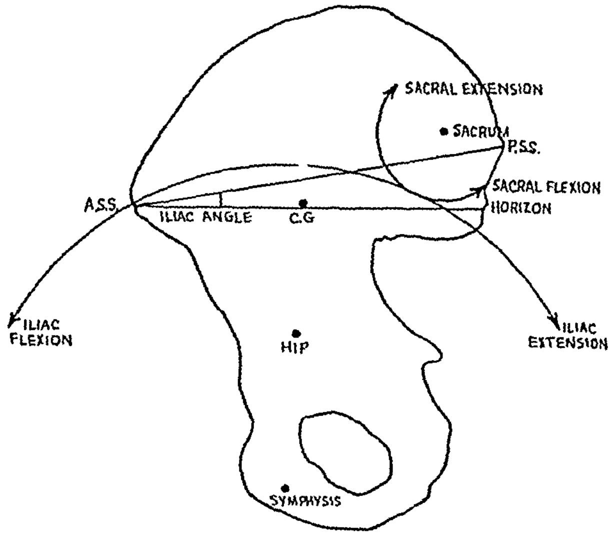

Fig. 1.—Centers of gravity and pelvic motion. A. S. S. and P. S. S., anterior and posterior superior spine; C. G., center of gravity.

All movements of the body in equilibrium revolve about the center of gravity. This point normally lies at the center of the pelvis, just below the promontory of the sacrum. Any shift of the center of gravity tends to change the shape of the pelvic ring. Thus, the intrapelvic joints are the first to be affected by a disturbance of equilibrium. Motion of the joints produces a change in the tension of the pelvic ligaments from which streams of proprioceptive impulses arise. The impulses travel in every spinal nerve from the first lumbar to the fourth sacral and provoke a widespread reflex response. When the weight of the body is supported on the feet, a shift of the center of gravity in any direction produces a protective reflex movement of the pelvis in the opposite direction that tends to return the center of gravity to its normal position.

One of the functions of a ligament is to initiate self-protective reflexes that preserve it from excessive tension. For example, the average person has slipped and turned an ankle many a time, but the protective reflex usually bounced the ankle back before a ligament was sprained. Such a reflex always tends to relax the ligament, regardless of the type of the initial stimulus, be it tension, trauma, inflammation or whatever. Thus, when a pelvic ligament is insulted, it evokes a powerful protective reflex that tends to relieve it of weight-bearing. It has been seen that such a reflex moves the pelvis away from the center of gravity, and if the insult persists the continuing muscle spasm tends to maintain the abnormal pelvic position. The ability of the pelvic reflexes to return the center of gravity to its normal position without the intervention of more distant, and consequently less efficient, reflexes is a determining factor in normal posture. If the pelvic reflexes are not competent to maintain equilibrium, the function is passed along to the spine and lower extremities. Scoliosis and other postural defects are produced. Later results of the imbalance are spreading reflexes, disturbed function in other joints, atrophies and contractures.

Under certain circumstances a powerful protective reflex may be initiated by a stimulus so weak that it causes no alarm in consciousness. Under other circumstances an equally weak stimulus may be so facilitated in the central nervous system that it appears in consciousness as pain. Somewhere between the two extremes lies the normal condition, in which a stimulus, to cause pain, must be sufficiently intense to threaten the integrity of structure or function. Disturbances of pelvic structure and function usually are immediately painful, but the reflex protection is so powerful that the full extent of the damage may not be appreciated for years. The typical story is, "I had a twinge of pain right here (pointing), but I didn't pay much attention to it. The next morning, I had pain all over here (rubbing), and I couldn't get out of bed." Thus it is apparent that the first pain tends to be sharply localized, but so evanescent that it often is forgotten. Later pain is more diffuse, dull and aching in character. If the affected structure receives only a few sensory fibers from a spinal nerve, the painful stimulus also may be referred in consciousness to the major sensory distribution of the nerve. The typical story is, "I thought some one had stuck a knife in my back, and I looked around to see who hit me. It shot down my leg like a streak of lightning on a red hot wire, and now the whole back of the leg kind of aches." Here again, the original twinge is well localized and the original reference is sharply delimited, but the subsequent referred pain is diffuse.

Referred pain typically originates in structures that receive little or no sensory supply from the spinal nerves. This type of structure includes most of the denser connective tissues, such as scars, fascias, ligaments and joint capsules, as well as blood vessels and viscera. The injection of a few drops of a 6 per cent solution of sodium chloride into such a structure produces a harmless but temporarily painful sensory stimulus. The method is useful in mapping out areas of referred pain. In general, when the afferent impulse travels in a single spinal nerve any referred pain tends to appear in the corresponding dermatome, or major sensory distribution of the nerve. Therefore, in theory, a pain referred to dermatome x should infallibly reflect a disturbance in ligament y or in joint z, if y and z are the only structures entirely supplied by sensory fibers from nerve x. The theory seldom works, for several reasons. A quantitative increase in the painful stimulus, such as the injection of more than a few drops of the hypertonic solution, may cause the afferent impulses to spread within the spinal cord. Thus, a pain referred to the posterior division of a spinal nerve may gradually spread to the anterior division or to adjacent segments. The dermatomes may be so small and so crowded together as to be practically indistinguishable, a condition that occurs in the buttocks and sacral region. A structure that is supplied by several nerves may refer pain to several small dermatomes without producing a specific pattern. Finally, pelvic pain may arise in a wide variety of structures, in the trunk, in the pelvis or in the lower extremities, all of which refer pain to the same area. Consequently the pain itself is of little value in differential diagnosis, unless it involves extrapelvic areas in which the dermatomes are more discrete.

The pelvic pain that regularly accompanies physiologic relaxation of the female pelvis is so common that many women accept it as being unavoidable. Measurements of intrapelvic mobility in men who complain of pelvic pain from all causes show that the average amount of motion is one-third higher than normal. It follows that relaxation of the intrapelvic joints is the commonest cause of pelvic pain. Other common causes appear in the following list, from which disturbances of the nervous system, blood vessels and viscera have been omitted.

1. Disturbances in the function of the pelvic joints, muscles and ligaments, such as strains, sprains, sacroiliac slips and symphysial subluxations.
2. Disturbances in the function of the lumbar joints, muscles and ligaments, such as strains, sprains and zygapophysial subluxations.
3. Structural changes in the pelvis and lumbar spine, such as those produced by congenital defects, fractures, degeneration of intervertebral disks, arthritis, suppurative diseases and neoplasms.
4. Disturbances in the structure and function of the lower extremities, such as flatfeet.

In the physical examination of patients who complain of pelvic pain, areas of tenderness frequently are found in the joints, muscles, fascias and ligaments of the trunk and lower extremities. When pressure on such an area produces or aggravates the referred pain, an injection of procaine hydrochloride into the point of maximum tenderness is indicated. If the injection relieves the pain, one may assume that the site of origin has been found. Unfortunately, many of the pelvic and spinal structures are not readily accessible to palpation or injection, and a determination of function is necessary. If the suspected structure is a muscle, fascia or ligament, it should be put under tension in an endeavor to reproduce the pain. Many special tests have been devised for this purpose, such as straight leg raising and prone knee flexion. If a joint is suspected, it should be carried through its full range of motion; the motion should be measured, and the measurement should be compared with that of the normal joint. Any pain, crepitus or adventitious sound produced in the course of the examination should be noted. Without an examination of this sort, an accurate estimate of articular function is almost impossible. The procedure is standard elsewhere in the body, but hardly any one, except an orthopedic surgeon, applies it to the intrapelvic joints.

To the best of my knowledge, the medical literature contains only one description of a method for measuring flexion and extension of the innominate bones.[2] In this method the production of motion is accomplished by inserting a 1½ inch (4 cm.) lift under one of the subject's feet, meanwhile instructing him to keep both knees straight and both heels down to eliminate compensation in the lower extremities. The lift produces a shift in the center of gravity that cannot be completely compensated by the pelvic reflexes alone. Therefore the full extent of intrapelvic compensation is achieved before the spinal reflexes are called on to preserve equilibrium. In other words, the intrapelvic joints are carried to one extreme of allowable motion, the innominate bone on the lower side flexing and that on the higher side extending. The production of motion is entirely reflex and does not depend on the subject's volition. Measurements are taken with an inclinometer (fig. 2) to determine the angle of iliac inclination on each side. This angle is defined as the angle formed by the plane of the floor and the projection of a straight line that passes through the anterior-superior and posterior-superior spines of an ilium. Innominate flexion increases the angle and extension decreases it (fig. 1). When the reading for each ilium has been taken, similar measurements are taken with the lift under the other foot. The difference between the two readings on each side represents the complete flexion-extension range of each innominate bone.[3] The entire procedure is simple, brief and applicable to any patient who can stand erect without support.

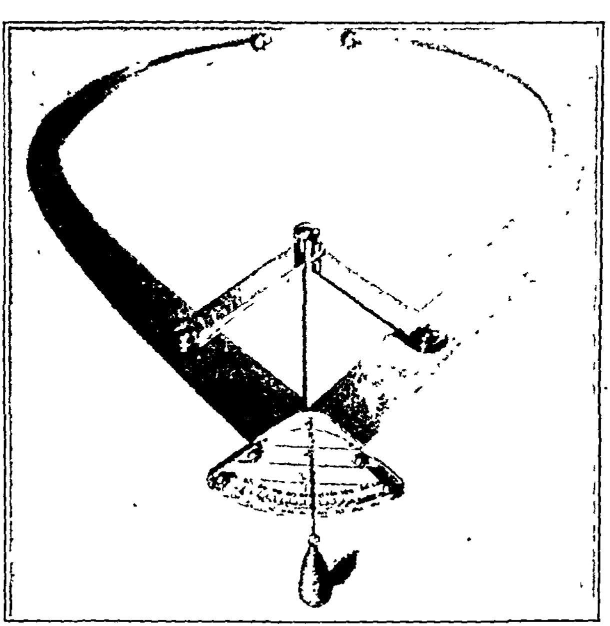

Fig. 2.—An inclinometer.

Structural changes in bones and joints usually appear in roentgenograms, but many functional changes do not. Symphysial and zygapophysial subluxations are demonstrable on routine films, but the technic of visualizing sacroiliac slips is slow and expensive, as compared with clinical measurements. One case in particular will serve to illustrate the need for inclinometric measurements. When a sacroiliac slip locks the two bones in flexion, the stability of the joint is usually increased and there may be little alteration in the ligamentous tension. Consequently the symptoms may be so mild that the incident is soon forgotten, but the structural imbalance remains. The function of balance passes to the opposite joint, which gradually acquires compensatory relaxation and increased mobility. If the slip occurs in childhood and is not promptly corrected, a structural scoliosis may develop as the child grows. Furthermore, when symptoms of strain begin to appear the pain is often related to the movable joint, and the slip may be entirely overlooked. In this case an error in diagnosis may lead to a permanent deformity, but in every case of pelvic pain an accurate estimate of pelvic function is essential to an accurate diagnosis. An inclinometer is the instrument of choice for quickly determining that the intrapelvic joints are locked, are relaxed or are functioning normally.

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[2] Pitkin, H. C., and Pheasant, H. C.: Sacrarthrogenetic Telalgia: II. A Study of Sacral Mobility, J. Bone & Joint Surg., **18**: 365, 1936.

[3] Provided, of course, that any simultaneous flexion or extension of the innominate bones at the hip joints must be subtracted from the result.

SUMMARY

Pelvic pain may arise from disturbances in the structure and function of the bones, joints, muscles, ligaments and fascias of the trunk, pelvis and lower extremities. (Disturbances of the nervous system, blood vessels and viscera are not discussed.) The relaxation of the pelvic joints that precedes menstruation and accompanies pregnancy is the commonest cause of pelvic pain. A clinical method for measuring the motion of the intrapelvic joints is presented, with the conclusion that an accurate estimate of pelvic mobility is essenial to an accurate diagnosis.

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ABSTRACT OF DISCUSSION

Dr. C. Frederic Fluhmann, San Franciso: Dr. Pitkin has given a splendid, simplified analysis of orthopedic causes of backache, a symptom of frequent occurrence in obstetric and gynecologic patients. As he pointed out, backache is an exceedingly frequent observation during pregnancy and also in women just before, during and occasionally just after menstruation. This is due to a preternatural mobility of the pelvic joints, and there is good reason to believe that it is an endocrine disturbance. Hisaw years ago showed that the injection of a corpus luteum extract produced an extensive relaxation and separation of the pelvic joints of guinea pigs. When one discusses backache in gynecologic patients, one subject always comes up, and that is the role that retroversion of the uterus plays in the causation of backache. As the years have gone by, it has become apparent that in an uncomplicated retroversion backache is seldom the result of that lesion. In most institutions there has been an extensive diminution in the number of plastic operations, but one must face the fact that in the country at large there are still far too many suspensions of the uterus being performed for backache and unjustifiable indications. Backache accompanies many lesions of the pelvis, for example, certain types of fibromyomas, endometriomas and pelvic inflammatory disease. However, I should like to call attention to an ailment which produces pain in the lower part of the abdomen and in the back and is due to a low grade inflammatory condition of the parametrium. Its chief anatomic feature is a decided thickening and tenderness of the sacrouterine ligaments. This may easily be missed on vaginal examination but is readily demonstrated by a rectovaginal examination.

Dr. J. W. Davies, New York: The treatment of pelvic pain requires a broad comprehension to properly evaluate its source. It has been shown how important the well trained general practitioner is in properly evaluating the cause of pain. It is he who should refer the patient to the proper specialist for specific treatment. The psychiatrist has had satisfactory results in treating some cases of pelvic pain. The urologist and the orthopedist have frequently relieved pain after the gynecologist has been unable to do so. Each specialist is sincere, but because of overspecialization the comprehension of the case is frequently narrowed. Meetings such as this tend to increase one's perspective by suggesting that there may be a single factor common to all the specialties which may be of aid in treatment. One important cause of pain is the layer of tissue which lies superficial to the peritoneum. This layer is erroneously called the subperitoneal tissue, and because of the misnomer insufficient attention has been directed toward its study. This preperitoneal tissue envelops the kidney, ureter, bladder and the urethra, also the uterus, cervix and the vagina. The rectum likewise is encapsulated by this tissue, which permits independent gliding of the various systems. If there is an abnormal slipping of an abdominal or pelvic organ traction may be deflected to another, more sensitive, organ, which may cause pain even though it is not primarily at fault. The enveloping preperitoneal tissue runs to the lateral pelvic wall, and it is possible to trace the fibrous portion through the sacroiliac joint into the dimple of the subcutaneous tissue of the back. A slipping of the sacrum on the ileum, such as Dr. Pitkin has demonstrated, may cause traction on the preperitoneal tissue and thereby angulate or compress pelvic nerves. If the pain is referred down the leg its treatment is relatively simple, but if pain is referred to a pelvic organ it is more difficult for the patient to choose the specialist to be consulted. During menstruation the various joints become relaxed, and it is this relaxation of the joints which may cause sacroiliac hypermobility and the resultant menstrual backache. Pelvic congestion may angulate pelvic nerves and cause direct or referred pain. Infections of the urethra, cervix and uterus are drained by the pelvic lymphatic vessels, which are in the preperitoneal tissue. The diseased lymphatics may angulate the ureter or set up a secondary neuritis in the adjacent nerves.

Dr. Douglas Campbell, San Francisco: Recent investigations have shown that the two types of pain which are experienced—superficial or "bright" and deep "dull" or aching—arise from dermatomic and mesodermal tissues respectively. The dermatomic variety is rather easily localized; the mesodermal is diffuse, follows the myotomes or sclerotomes and consequently may be referred a considerable distance. Furthermore, pain arising from viscera or skeletal structures is frequently indistinguishable, so that a lesion of the back may be perceived as intra-abdominal or a diseased pelvic viscus may give rise to pain in the back. Neurologically, all varieties of pain are initiated by similar receptors, but deep pain traverses smaller fibers; reaching the cord and brain stem the impulses ascend spinothalamic pathways to the thalamus, whence they are relayed to appropriate cortical regions for appraisal and localization or to hypothalamic and lower reticular stations for autonomic and other reflex purposes. Pain impulses, in particular those of visceral or skeletal origin, are also stepped up in intensity and radiated to neighboring or remote structures through closed and open circuiting in the internuncial pools of neurones in the cord, stem and higher forebrain levels. Because of augmentation by the reverberating activities of internuncial pools and the autonomic functions of the diencephalon, prolonged protective spasm of neighboring muscles and reactions of the viscera occur. The autonomic features may lead to disturbances of personality, such as depression, irritability, loss of libido and anorexia with its consequences of malnutrition. Protective muscular spasm gives rise to more pain and increased autonomic disturbances. Vicious circles are thus established, the intensity and variation of which will depend to a great extent on the neuropsychic makeup of the patient. Some persons are more stable; others, who have lower pain thresholds or a neurotic disposition, are less stable and likely to over-react to even slight lesions of pain-sensitive structures. In persons of this latter group there frequently develops overtense musculature, particularly of the lower part of the back, due to anxious feelings about menstruation or other matters which concern their sexual life, and this, augmented usually by faulty posture and malnutrition, may lead to the perception of pain or at least discomfort, the misinterpretation of which under the pressure of neurotic attitudes stirs up more anxiety and establishes the vicious circle: pain—anxiety—increased tension—increased anxiety and so on.

Dr. Horace C. Pitkin, San Francisco: The discussion of this paper for the first time has begun to give an all-around picture of pelvic pain. A gynecologist and a psychiatrist have discussed it, and there has been an attempt to correlate and group together all the various conflicting factors of pelvic pain that make the problem so complex and so disturbing. I don't believe that anyone failed to make himself perfectly clear or that there are any questions that need to be answered

NERVOUS PATHWAYS INVOLVED IN PELVIC PAIN

Some Anatomic and Physiologic Aspects

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In this symposium on the subject of pelvic pain, a review of the basic anatomy and physiology of the nervous pathways of pain in general and of pelvic pain in particular will assist toward a more nearly complete understanding of the various clinical entities which may give rise to this symptom.[1] For a number of years most of the attention given to the subject of pain arising in the pelvic organs has been centered on the autonomic nervous system, which supplies these organs. It is obvious, however, that pain which arises in the pelvis may be somatic or visceral, or both, in origin. In this brief review the anatomy of both avenues of innervation will be considered and mention will be made of some of the concepts of the physiology of pain (see the accompanying illustration [1]).

SOMATIC INNERVATION

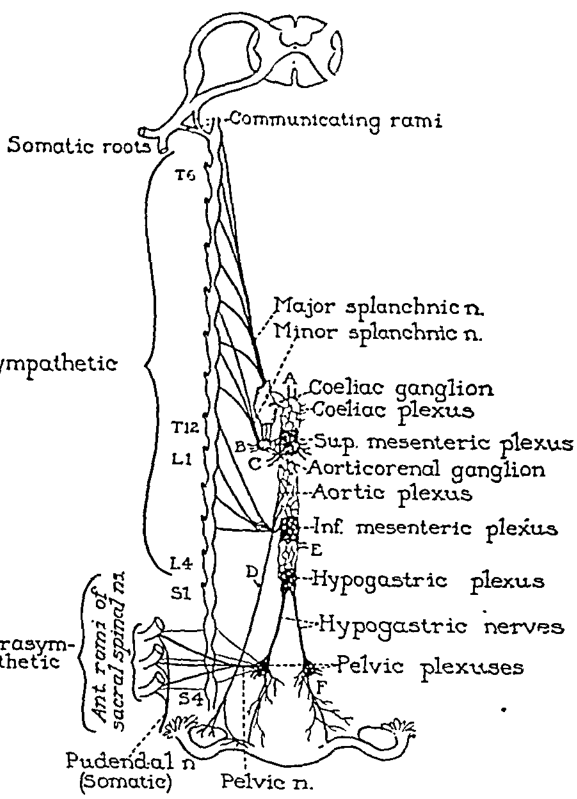
The term somatic innervation applies, of course, both to the sensory and the motor nerve supply to the frame of the body. The concern at this time is with the sensory somatic innervation, and it will be necessary to recall in general the origin and course of a sensory nerve. A spinal nerve arises from a segment of the spinal cord and is composed of an anterior (motor) root and a posterior (sensory) root. In the posterior nerve root is found the spinal ganglion, in which are located the nutrient cells of the sensory apparatus. This ganglion will be mentioned again in connection with the so-called sympathetic sensory nerves. After a short course as a single nerve trunk, each spinal nerve divides into anterior and posterior branches (or rami) which contain both sensory and motor components. Thirty-one such spinal nerves comprising eight cervical, twelve thoracic, five lumbar and five sacral nerves and one coccygeal nerve are present on each side of the body.

The posterior and anterior rami which arise from the mixed spinal nerves at the intervertebral foramina pass dorsally and ventrally, respectively. The posterior branches are relatively short and supply somatic structures on the dorsal surface of the body. The anterior branches, on the other hand, have a much wider distribution. They run independently in the thoracic region, but in other regions they anastomose freely to give rise to the complicated cervical, brachial and lumbosacral plexuses.

The anterior rami from the lumbar and sacral portions of the spinal cord and the coccygeal nerve forming the lumbosacral plexus probably constitute the group of nerves which have the most significance as far as interpretation of pelvic pain of somatic origin is concerned.[2]

There are short, direct branches which supply such muscles as the quadratus lumborum and the psoas major and psoas minor. The iliohypogastric nerve furnishes part of the supply to the transverse and internal oblique abdominal muscles, together with terminal branches to the peritoneum and to various cutaneous areas, including those over the lateral and upper portions of the iliac crest. The ilioinguinal nerves supply branches to the abdominal muscles, the peritoneum, cutaneous areas of the upper and medial parts of the thighs and, by labial branches, the mons pubis and the labia majora.

Branches from the femoral nerve in part supply the iliac and iliopsoas muscles. By other branches these nerves also supply fibers to the hip joint and cutaneous fibers to the anterior surface of the thigh. It is to be understood that all branches of some of these nerves are not mentioned because they do not apply to the subject under discussion. Another important nerve which arises from the lumbosacral plexus is the obturator



Anatomic distribution of the somatic and autonomic nerve fibers of concern to the gynecologist. *A*, Fibers to esophagus, stomach, duodenum, pancreas, liver, gallbladder and spleen; *B*, to kidney; *C*, to small intestine, cecum, ascending and transverse colon; *D*, to ovary and fallopian tube; *E*, to sigmoid and descending colon; *F*, to rectum, bladder and uterus. Somatic roots supply the abdominal wall and the parietal peritoneum. The pudendal nerve supplies the perineal structures.

From the Section on Obstetrics and Gynecology, Mayo Clinic.

Read in a symposium on "Pelvic Pain" before the joint meeting of the Section on Obstetrics and Gynecology and the Section on General Practice of Medicine at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

[1] From Mussey, R. D., and Wilson, R. B.: Pelvic Pain, a Follow-Up Study. Am. J. Obst. & Gynec. **42:** 759-766 (Nov.) 1941.

[2] Spalteholz, W.: Hand-Atlas of Human Anatomy, translated by L. F. Barker, ed. 5, Philadelphia, J. B. Lippincott Company, 1933, vol. 3, pp. 495-902.

nerve. This nerve gives off a branch to the external obturator muscle before dividing into anterior and posterior terminal branches which supply adductor muscles and cutaneous surfaces of the medial aspect of the thigh; the anterior branch gives off a branch to the hip joint.

That portion of the lumbosacral plexus known as the sacral plexus is formed from the anterior branches of the fourth and fifth lumbar and first to third sacral nerves. The pudendal plexus, which can be considered as a part of the sacral plexus, arises from the first four sacral nerves and supplies nerves to the pelvic viscera and to the muscles and skin of the perineum. The sacral plexus lies in the pelvis on the anterior surface of the pyriformis muscles. It sends branches to the pelvic girdle and to the lower extremity. Only the former will be mentioned.

Muscular branches are given off to the pyriformis, obturator internus, gemellus and quadratus femoris muscles. The superior gluteal nerve supplies branches to the gluteal muscles. The inferior gluteal nerve also supplies the gluteus maximus. The posterior femoral cutaneous nerves, by inferior clunial branches, supply the skin over the lower and lateral portions of the buttocks and, by perineal branches, furnish some of the sensory fibers of the perineum and of the posterior surfaces of the labia majora. From the pudendal plexus, which is situated in the lower part of the sacral plexus, muscular branches are given off to the levator ani and coccygeal muscles; visceral branches are given off to the rectum, bladder and vagina by the middle hemorrhoidal, inferior vesical and vaginal nerves. These visceral branches may go to their viscera directly or after union with the sympathetic plexuses.

The pudendal nerves leave the bony pelvis on the medial aspects of the ischial tuberosities, where they divide into the perineal and clitoral nerves. Just before this division they give off the inferior hemorrhoidal nerves, which supply the external anal sphincter and the skin of the anus. The perineal nerves give off superficial and deep branches. The superficial branches are the posterior labial nerves, which supply the skin of the perineum and the labia majora; the deep branches supply the superficial transverse perineal muscles and the bulbocavernosus. The dorsal clitoral nerves send branches to the deep transverse perineal muscles, to the urethral sphincters, to the clitoris and to both the major and minor labia.

VISCERAL INNERVATION

Visceral innervation is effected by the autonomic, or involuntary, nervous system. A survey of the writings of authorities[3] concerning the nerve supply of the viscera leads to the following conceptions:

The autonomic system can be classified on an anatomic basis into cranial autonomic, sympathetic proper and sacral autonomic components. It is worth while to note that the term sympathetic nervous system is properly applied only to that portion of the autonomic system which lies in the thoracolumbar region. Functionally, the cranial and sacral divisions are commonly called the parasympathetic system. In general the sympathetic and parasympathetic systems have antagonistic actions on organs which they both supply.

Another generalization in regard to the two systems is that in the sympathetic system the excitor cells usually are located in ganglions which are at a distance from the organs which they supply, and the excitor cells of the parasympathetic system are located in or adjacent to the organs which they supply. The excitor or efferent functions of the autonomic nervous system are of great importance and are generally known and understood. The portion of the autonomic system that is known as the sympathetic system begins with cells found in the lateral horns of the gray matter of the twelve thoracic and first two lumbar segments of the spinal cord.

These cells give rise to fibers which leave the cord via the anterior nerve roots to enter the mixed spinal nerves, from which they enter the anterior rami of the spinal nerves. The fibers then leave the anterior rami, forming the white rami communicantes, to enter ganglions of the lateral sympathetic chain, in which they end. These fibers from the lateral horn cells which pass to the sympathetic ganglions are known as connector, or preganglionic, fibers and are medullated. They may end in ganglions that are adjacent to their nerve root of origin or they may pass up or down the sympathetic chain to end in more distal ganglions. The connector fibers unite with excitor cells which are located in the ganglions. From these cells come the postganglionic, nonmedullated excitor fibers, some of which pass peripherally to supply visceral structures and some of which return to their corresponding spinal nerves as gray rami communicantes, to be distributed with branches of the spinal nerves to somatic structures. It is because of this latter fact that the sympathetic supply to the skin is segmental in character. By these postganglionic fibers are effected changes in the caliber of blood vessels, activity of sweat glands, control of functions of the bladder and bowel, regulation of the force and rate of contractions of the heart and other similar physiologic activities.

That this system also has afferent neurons and that the efferent excitatory effects occur following receipt in the central nervous system of afferent impulses is often forgotten. These afferent fibers have a fundamental arrangement similar to that of the somatic sensory neurons. The nutrient cells for the afferent fibers, which were previously mentioned, are found in the posterior root ganglions. The fibers from the viscera find their way to the central nervous system over the same anatomic route as that traveled by the autonomic, efferent, excitatory fibers, except that the fibers from the viscera enter the spinal cord through the posterior nerve roots. It is the current opinion that those afferent neural fibers which are concerned with transmission of the sensation of pain are true sensory fibers and should not be considered as part of the autonomic nervous system except from the anatomic point of view. Thus, if this view is held, it becomes incorrect to speak of sympathetic sensory nerves. One must make a distinction between the afferent nerves concerned with purely autonomic functions and those concerned with the transmission of pain. From this description it follows that pain impulses which arise in the pelvic viscera are transmitted by sensory nerves which travel in the anatomic sympathetic system but which physiologically are not part of it.

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[3] (*a*) Wright, S.: Applied Physiology, ed. 7, New York, Oxford University Press, 1940. Best, C. H., and Taylor, N. B.: The Physiological Basis of Medical Practice, ed. 4, Baltimore, Williams & Wilkins Company, 1945. (*b*) Gask, G. E., and Ross, J. P.: The Surgery of the Sympathetic Nervous System, ed. 2, Baltimore, William Wood & Company, 1937. Labate, J. S., and Reynolds, S. R. M.: Sensory Pathways of the Ovarian Plexus: An Experimental Study, Am. J. Obst. & Gynec. **34:** 1-11 (July) 1937. Meigs, J. V.: Excision of Superior Hypogastric Plexus (Presacral Nerve) for Primary Dysmenorrhea, Surg., Gynec. & Obst. **68:** 723-732 (April) 1939; Gynecology: Pelvic Pain and Its Relief, New England J. Med. **222:** 187-190 (Feb. 1) 1940. Labate, J. S.: Surgical Anatomy of Superior Hypogastric Plexus—"Pre-Sacral Nerve," Surg., Gynec. & Obst. **67:** 199-211 (Aug.) 1938. Gaskell, W. H.: The Involuntary Nervous System, London, Longmans, Green & Co., 1916. (*c*) Kuntz, A.: The Autonomic Nervous System, ed. 3, Philadelphia, Lea & Febiger, 1945. (*d*) Fontaine, R., and Herrmann, L. G.: Clinical and Experimental Basis for Surgery of the Pelvic Sympathetic Nerves in Gynecology, Surg., Gynec. & Obst. **54:** 133-163 (Feb.) 1932. Davis, A. A.: The Innervation of the Uterus, J. Obst. & Gynaec. Brit. Emp. **40:** 481-497 (May) 1933; The Surgical Anatomy of the Presacral Nerve, ibid. **41:** 942-954 (Dec.) 1934; Presacral Nerve: Its Anatomy, Physiology, Pathology and Surgery (Hunterian Lecture), Brit. M. J. **2:** 1-6 (July 7) 1934. Ranson, S. W.: Afferent Paths for Visceral Reflexes, Physiol. Rev. **1:** 477-522 (Oct.) 1921. Learmonth, J. R.: Resection of the Presacral Nerve for Cord Bladder, Proc. Staff Meet., Mayo Clin. **5:** 54-56 (Feb. 26) 1930; A Contribution to the Neurophysiology of the Urinary Bladder in Man, Brain **54:** 147-176 (June) 1931. Neurosurgery in Treatment of Diseases of Urinary Bladder: Anatomic and Surgical Considerations, J. Urol. **25:** 531-549 (June) 1931. (*e*) Curtis, A. H.; Anson, B. J.; Ashley, F. L., and Jones, T.: The Anatomy of the Pelvic Autonomic Nerves in Relation to Gynecology, Surg., Gynec. & Obst. **75:** 743-750 (Dec.) 1942. (*f*) Weinstein, B. B.: The Surgical Anatomy of the Superior Hypogastric Plexus with a Report of 150 Personal Dissections, ibid. **74:** 245-255 (Feb. 1) 1942. (*g*) Reynolds, S. R. M.: Physiology of the Uterus with Clinical Correlations, London, Hamish Hamilton Medical Books, 1939. White, J. C.: The Autonomic Nervous System: Anatomy, Physiology and Surgical Treatment, New York, The Macmillan Company, 1935.

The sympathetic supply to the pelvic viscera is formed by preganglionic, connector fibers which pass through the sixth to the twelfth sympathetic ganglions to form the major and minor splanchnic nerves. After these have passed through the celiac ganglion they form the celiac plexus. This plexus lies on the abdominal aorta just behind the pancreas. Fibers from the celiac plexus pass downward to form, successively, the superior mesenteric plexus, the aortic and intermesenteric plexuses and the inferior mesenteric plexuses, all of which lie on the abdominal aorta. The inferior mesenteric plexuses receive additional fibers from those portions of the lateral sympathetic chain which extend from the twelfth thoracic to the third lumbar ganglion. Farther down, at the bifurcation of the aorta, the fibers enter the region of the interiliac trigone to form the superior hypogastric (presacral) plexus at the levels of the fourth and fifth lumbar vertebrae. The superior hypogastric plexus also receives fibers via each of the four lumbar sympathetic ganglions.

From the superior hypogastric plexus, fibers descend to the pelvic viscera in a varying manner. It is the opinion of most writers on the subject that only rarely is there a single presacral nerve. Curtis and his associates [3c] stated that in 20 per cent of cases there was fusion into a single nerve; however, Weinstein [3f] found the single nerve to exist in but 4 per cent of his dissections, while there were bilateral nerve cords in 8 per cent and a plexus pattern in 88 per cent.

Below the sacral promontory the superior hypogastric plexus becomes the middle hypogastric plexus, and the latter divides at the level of the first sacral vertebra to form the bilateral inferior hypogastric plexuses. These continue downward and laterally along the pelvic wall, and at the level of the third sacral vertebra they receive fibers from the sacral plexus. These fibers from the sacral plexus represent the parasympathetic portion of the autonomic nervous system and are known as the nervi erigentes. These are the source of parasympathetic innervation to the uterus, tubes, ovaries and the walls and internal sphincters of the bladder and rectum.

From this description it is obvious that the inferior hypogastric plexus forms the anatomic pathway for both sympathetic and parasympathetic systems in this portion of the pelvis. However, there is no known physiologic or anatomic junction of the two parts of the autonomic system in this vicinity. From a point in the vicinity of the posterior ends of the uterosacral ligaments, the fibers of the inferior hypogastric plexus descend over the rectum to join the plexus of the pelvis. This plexus is also called the ganglion of Frankenhäuser and the uterovaginal plexus. It is located on the posterior surface of the base of the broad ligament, just lateral to the lateral vaginal fornix. From this plexus the uterus, bladder, vagina and rectum receive their sympathetic nerve supply.

The ovaries, as would be expected when their embryologic origin high in the abdomen is considered, receive their sympathetic nerve supply from fibers which reach them along the ovarian arteries and which come from the aortic plexus. The uterine tubes also receive their sympathetic supply from fibers which pursue the same anatomic course. The neural components which supply the ovary originate mainly from the tenth thoracic nerve, while those which supply the tubes are from the eleventh and twelfth thoracic nerves. Because of the differing anatomic routes, it is obvious that neurectomy in the interiliac trigone, although, as a rule, it relieves pain which originates in the uterus, will have no effect on pain which originates in the ovaries.

RECEPTION OF PAIN AND CENTRAL TRANSMISSION

Pain is but one of the sensations carried by sensory nerves, but knowledge concerning the manner in which pain impulses are formed is less nearly complete than is that concerning other sensations received from external stimuli (exteroceptive) and concerning those that are received from internal stimuli (proprioceptive).[4] This sensation apparently has its origin in stimulation of free nerve terminations while other types of sensation apparently are caused by stimulation of specific types of end organs such as muscle spindles, organs of Golgi and pacinian corpuscles. There seems to be but little doubt, however, that there are specific nerve endings which respond to appropriate painful stimuli and not to others.[5]

After such a stimulus the pain impulse is carried over nervous pathways to the spinal cord, as has been indicated in the foregoing sections. An important physiologic fact is that neurons which carry each type of sensation separate into groups soon after they have reached the cord. After they have entered the cord through the posterior nerve roots, the sensory fibers which convey the sensation of pain enter the posterior gray column and connect with nerve cells therein. A secondary relay of axons crosses to the opposite side in the anterior portion of the gray matter, to ascend as the lateral spinothalamic tract. The grouping in the spinal cord of axons which convey visceral pain is not as definite as is the grouping of axons which convey somatic pain; it is known [3c] that abolition of true visceral pain by cordotomy requires more extensive section than is required for abolition of somatic pain. After the axons have ascended in the cord to the medulla as the spinothalamic tract they enter the mesial fillet and continue in this structure to reach the thalamus.

The thalamus represents the highest sensory level of lower animals. In man this function is largely taken over by the sensory cortex. As far as the thalamus and consciousness of pain are concerned, it is known that if the connections between the thalamus and sensory cortex are severed, either painful or pleasurable stimuli can be felt and that such sensations are greatly accentuated in degree. From the thalamus sensory stimuli are carried to the parietal cortex, to end, presumably, in the ascending parietal convolution which lies posterior to the central rolandic sulcus.

COMMENT

Interpretation of a stimulus such as pain demands consideration of its severity, duration, location and quality. It is well known that pain which arises in superficial somatic structures can be adequately evaluated as to these characteristics. Cutaneous pain is always of the same quality, no matter what the reason for it may be, and is not difficult of localization.[6] Pain which arises in muscle is more likely to be disagreeable and fluctuating and more difficult to locate. When one endeavors to identify the localé of pain which arises in deeper structures, difficulty arises and it is necessary to take into consideration the mechanism of direct and referred pain.

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[4] Adrian, E. D.: The Mechanism of the Sense Organs, Physiol. Rev. **10**: 336-347 (April) 1930. Footnote 3a.

[5] Pain and Disease, editorial, Brit. M. J. **1**: 340-341 (Feb. 12) 1938.

[6] Lewis, T.: Suggestions Relating to the Study of Somatic Pain, Brit. M. J. **1**: 324-325 (Feb. 12) 1938.

Studies and clinical observations concerning visceral pain form a most interesting chapter in medical history. Ross,[7] Lennander,[8] Head,[9] Mackenzie,[10] Hurst,[11] Morley,[12] Lewis[13] and Kellgren[14] and others have developed more or less controversial ideas relative to the derivation of pain from a viscus. Early authors rejected the idea that pain could arise directly from a viscus. At present, however, most authorities accept two types of visceral pain, direct pain and referred pain. It has been suggested that the viscera have not developed a sense of localization such as that of the skin, so that the effect of disturbance may not be felt in the organ affected. The stimulus may be conducted to that portion of the spinal cord from which the sympathetic nerves that supply the organ are given off and irritability may be set up in that segment of the cord. From there, the stimuli may be distributed as pain or discomfort to somatic regions served by the segment of the cord concerned.

It is highly possible that there is a subliminal fringe, or subthreshold, of excitation of sensory nerves;[15] that is, a certain minimal number of afferent impulses must be received by a central neuron before sufficient excitation occurs to transmit a stimulus to the sensory cortex. For example, afferent sensory impulses are received from a viscus and from a neighboring somatic region, either of which alone is subthreshold, but as these impulses reach the same portion of the cord, the stimulus is sufficient to cross the threshold and a sensory impulse is set up, which is consciously localized in the somatic rather than in the visceral region.

It appears that a certain type of stimulus must be present to produce direct visceral pain. Viscera are insensitive to such stimuli as cutting, burning and crushing but are sensitive to adequate stimuli which threaten to interrupt ordinary physiologic processes. Such stimuli are rapid distention or vigorous contraction of hollow viscera, rapid stretching of the capsule of a solid viscus, crushing or stretching of blood vessels and anoxemia of functioning muscular tissue.

"Even with combined reflex and direct sympathetic nerve response to pain, the pelvic organs remain relatively insensitive to pain."[16] Much of the sensation of pain from visceral lesions is owing to the somatic pain produced by stretching, injury or inflammation of the peritoneum. In diagnosis of the cause of pelvic pain and evaluation of its degree, intangible factors as well as pathologic changes in the viscera must be considered. For example, the pain caused by a lesion of a pelvic viscus may be localized at first, but if the patient becomes anemic, is exhausted by disease or is under nervous or mental stress a subthreshold stimulus, which ordinarily would be unnoticed is registered as pain. Or the stimulus may become of a more generalized nature, until finally the pain or discomfort may have no apparent relation to the affected organ. In certain cases of pelvic pain—for example, certain cases in which the complaint is of so-called uterine or ovarian pain—the sensation perhaps is psychic or psychosomatic in origin. Violent emotion accompanied by vascular contraction of surface vessels and of the vessels of internal organs may give rise to sensations of pain.

ABSTRACT OF DISCUSSION

Dr. Arthur H. Curtis, Chicago: As Drs. Wilson and Mussey have stated, the spinal nerves supply the somatic tissues. The visceral innervation has been considered largely autonomic, comprised of sympathetic and parasympathetic fibers; but it is now believed that an indeterminate number of pain-conducting fibers of sensory nerves are incorporated with the autonomic nerves. The fibers of the superior hypogastric plexus, or so-called presacral nerve, of so much interest in clinical gynecology, are supported in a loosely woven delicate meshwork of connective tissue. One cannot remove the connective tissue in its entirety without destruction of the delicate strands of nerve fibers, many of which are grossly discernible, although more clearly seen with a dissecting lens. I believe that skilled dissection of a well preserved body always reveals innumerable presacral nerve fibers; discovery of a single strand bespeaks inadequate dissection of a desiccated, poorly preserved specimen. It is of surgical interest to note that the nerve trunks of the superior and middle hypogastric plexuses tend to be located to the left of the midline. Presacral neurectomy should therefore be particularly thorough on the left side, which is more difficult to dissect; the superior hemorrhoidal artery and vein and the left ureter should be identified as a routine measure for safety.

Dr. J. V. Meigs, Boston: Drs. Wilson and Mussey's paper is very technical and it is difficult to use its perfect neurologic descriptions in the interpretation of clinical disorders. Certain considerations that I consider important are the interpretation of the pain which occurs in patients suffering with dysmenorrhea. It is extremely difficult to separate real pain from psychic pain, or that which is expected to occur when bleeding appears. To obviate this problem and to indicate to the surgeon which patients may and which patients may not benefit by a presacral neurectomy or excision of the superior hypogastric ganglion a simple test has been developed. This test has been satisfactory in 85 to 90 per cent or more of the patients who have been operated on for relief of dysmenorrhea. Many patients are so conscious of pelvic pain at the time of the menses that a way had to be developed to enable the physician to differentiate real and psychic pain. Sturgis and Albright and later Sturgis and Meigs proved that essential dysmenorrhea could be overcome by the proper use of diethylstilbestrol or estradiol dipropionate. These hormones given in proper dosage prevent ovulation, and it is well known that anovulatory cycles are without pain. This appears to be a good test to separate real dysmenorrhea from assumed or psychic dysmenorrhea. Therefore, before a presacral neurectomy is done one of the methods already described is used to prevent ovulation. I have as a rule used diethylstilbestrol as an oral medicament. The plan is as follows: Starting on the first day of the menstrual cycle the patient is given 1 mg. of diethylstilbestrol for twenty days, and if a flow occurs within three to five days after cessation of the medicament the flow is considered as anovulatory. This flowing should be painless. If the patient says that the pain is just as intense as ever something has gone wrong with her method of treatment. If the patient says that it is the most wonderful treatment and that she had no pain at all, then that patient has true essential dysmenorrhea. If the patient says that she is better or improved but that she still had some pain, then she is suffering from a psychic type of pain and does not evaluate her discomfort accurately. The only patients whom I operate on for pain of dysmenorrhea are those who say, after the use of diethylstilbestrol, that it is wonderful and they had no pain at all. In these patients the results of excision of the superior hypogastric plexus should be 100 per cent satisfactory.

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Dr. B. B. Weinstein, New Orleans: I should like to comment on the term "presacral neurectomy" because, as Uncle Remus used to say, "there ain't no such animal." In regard to a prelumbar plexus, the superior hypogastric sympathetic plexus, in the dissection of 300 of these the incidence of a single "nerve" ran slightly more than 1 per cent. I have been interested in this question for some time and have carefully followed the use of superior hypogastric sympathectomy, particularly in primary dysmenorrhea. I think the failures that have been reported in primary dysmenorrhea are based on a lack of appreciation of the anatomy of the plexus and a correct selection of the type of case for which this procedure should be reserved. As Dr. Mussey pointed out, one should be able to differentiate the ovarian and uterine sources of pain, and with the further clarification which Dr. Meigs suggested, one should exercise far more care in the selection of patients as candidates for superior hypogastric sympathectomy. In patients who are properly selected and in those in whom a correct hypogastric sympathectomy is performed, clearing out all the fibers in the interiliac trigone down to the periosteum, there should be universally good results. I should like to call attention to the left lateral deviation of the hypogastric sympathetic fibers in the interiliac trigone, which occasions some of the disappointment in results which have been noted. This deviation of fibers to the left is frequently overlooked, and an area in the midline of the interiliac trigone is excised under the erroneous impression that the so-called presacral nerve has been removed. If one performs a careful resection of the area, removing all the interiliac trigonal fibers, there should be no question about all the nerve filaments being removed and there should also be no question about nerve fibers being found by the pathologist on examination of the excised tissue. Superior hypogastric sympathectomies for primary dysmenorrhea should be reserved as a treatment of last resort, after the more conservative procedures of psychotherapy, adequate sedation, antispasmodics and hormonal therapy have been exhausted.

Dr. John G. P. Cleland, Oregon City, Ore.: Since I was the first, some twenty years ago, to evolve any method of positively determining the nervous connections of any particular internal organ to the cord and was the first to publish after years of experimentation on dogs and private patients conclusive evidence of the sensory supply of the uterus, I may add a little to Dr. Mussey's and Dr. Wilson's presentation of this important subject. May I suggest a test to determine when presacral neurectomy should be done? The pathway of pain from the uterus passes from the presacral nerve laterally upward through each lumbar sympathetic chain to enter the cord by the twelfth and eleventh thoracic roots. The point I wish to bring home is that any one may block the pain of uterine contraction at any point along this pathway of pain. The method I use is based on careful anatomic measurements of the average distances of the pathway from certain constant bony landmarks; so that, whether the patient be thin or fat, the pathway of pain may be consistently blocked with as little as 2.5 to 5 cc. of long-acting anesthetic agent. By the use of such small doses, which have completely relieved pain dozens of times, I feel that I have proved that the pathway does not follow the aortic plexus upward, and that therefore it may be reached, if one so wishes, by the technic of lumbar sympathetic block published by Dr. Alton Ochsner.

Dr. Robert D. Mussey, Rochester, Minn.: I wish to thank the gentlemen who have discussed this paper. I am particularly grateful to Dr. Curtis for his scholarly presentation. In writing this paper we considered that we were distinctly limited to the subject of nervous pathways, and we did not report on some of the avenues which have been discussed this morning. I appreciate the fact that these points have been brought out because the subject of pelvic pain is a broad one and certainly it still needs clarification.

TREATMENT OF CANCER OF THE FACE, MOUTH AND NECK WITH IRRADIATION

CHARLES L. MARTIN, M.D.
and
CARLETON WRIGHT, M.D.
Dallas, Texas

Cancer of the exposed surfaces of the skin and cancer of the mouth are of unusual interest to physicians in the Southern states because of their high incidence in this area. Mountin and Dorn[1] described this geographic peculiarity in 1939 and observed that the increase in the number of oral lesions over that found in other regions was confined almost entirely to women. Although no explanation was offered for this observation, our own experience indicates that it is due to the prevalent habit of snuff dipping among the women of the poorer classes in the South. About 90 per cent of the women admitted to our clinic with cancer of the mucosa of the cheek and palate have dipped snuff for long periods of time.

Phillips[2] called attention to the high incidence of cutaneous cancer in farmers and ranchers in the Southwestern states and reported that 33.8 per cent of 3,683 cancers recorded in a United States Public Health survey made for the Dallas-Fort Worth area in Texas in 1939 were cutaneous lesions. The next highest figure was 30.3 per cent recorded in Birmingham, Ala. Most dermatologists believe that this high incidence results from constant exposure to sunshine and hot winds, which produce multiple precancerous lesions in the blond type of skin found so predominantly in the white population of the Southwestern states. Malignant lesions of the skin are so common in Texas that the average outdoor worker is prone to disregard them until they become large enough to cause pain or inconvenience.

TECHNIC

In our clinic all the lesions under consideration are treated primarily with irradiation and electrosurgical methods, and patients are referred to a plastic surgeon only when complications appear or when a restoration of destroyed tissue is indicated. Since this plan of procedure is looked on with disfavor in some surgical centers, a report of our results should be of interest.

Epidermoid carcinomas of the skin and lip which measure less than 2 cm. in diameter and show little or no infiltration are treated with superficial roentgen therapy. The treatment factors are: 85 kilovolts, 5 milliamperes and a target skin distance of 16 cm. and a filter of 0.5 mm. of aluminum. The area treated must cover the lesion and an appreciable margin of normal skin around its edges. Daily doses of 1,100 r (measured in air) are given for four or five days, the total dose being 4,400 to 5,500 r. When the tumor is elevated well above the surface the presenting portion is removed by electrosurgical intervention with the patient under local anesthesia before the roentgen therapy is started. This procedure is important because it renders the extremely large doses of irradiation recommended by some radiologists unnecessary. A rather severe reaction appears about seven days after the treatment is completed, and the treated area is often

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Read before the Section on Radiology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 4, 1946.

[1] Mountin, J. W., and Dorn, H. F.: Some Peculiarities in the Geography of Cancer, J. A. M. A. **113**: 2405 (Dec. 30) 1939.

[2] Phillips, C.: The Relationship Between Skin Cancer and Occupation in Texas, Texas State J. Med. **36**: 613, 1941.

denuded. All evidence of the tumor disappears during the period of reaction, and healing occurs in six to eight weeks. The resultant scarring is slight and the cosmetic results, particularly on the lip, are excellent. Each treatment requires only a few minutes for its administration, and the patient loses little time from his occupation. This technic, which has been described in detail in previous articles,[3] was built around the procedure described by Pusey[4] in 1907 and can hardly be looked on as new or untried.

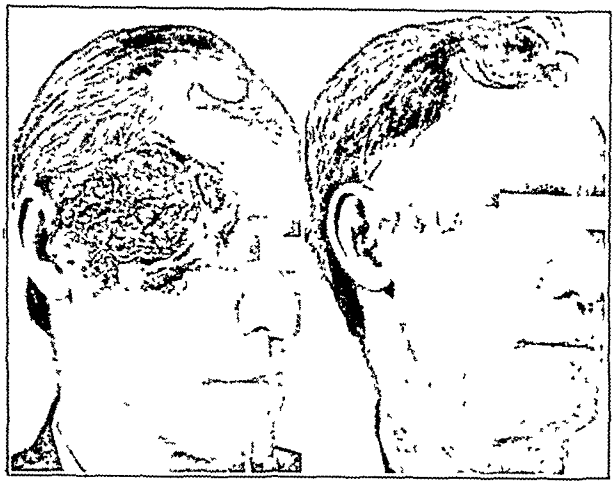

Fig 1.—Large squamous cell carcinoma, grade 2, which has remained well for ten years following one course of roentgenologic therapy given with the Coutard technic

When the superficial method is applied to large areas, the reaction is severe and healing is often slow. Although it was used with some success in the treatment of large lesions in our earlier work, the divided dose deep therapy technic first described in this country by Coutard[5] in 1932 was found to offer many advantages. Our modification[6] of the Coutard method for the treatment of large carcinomas of the skin was published in 1935, but some changes in this technic have since been made. At the present time the treatment factors are: 200 kilovolts, 20 to 25 milliamperes, a target skin distance of 50 cm. and filters varying from 0.5 mm. of copper and 1 mm. of aluminum to 0.8 mm. of tin, 0.25 mm. of copper and 1 mm. of aluminum. The heavy filtration is used when it seems advisable to reduce the cutaneous reaction to a minimum.* Ports measuring 15 cm. on a side have been used successfully, but most of this work has been done through 10 cm. ports. Just as with the superficial method, the area treated must include a strip of normal skin completely surrounding the tumor. For squamous cell carcinoma a daily dose of 300 r measured in air is administered (skipping Sundays) until a total of 3,600 roentgens has been given. The sequence of events is similar to that observed with the superficial technic, but healing may not be complete for two or three months after the treatment is finished. Here again it is desirable to remove polypoid masses by an electrosurgical procedure before the roentgen therapy is started.

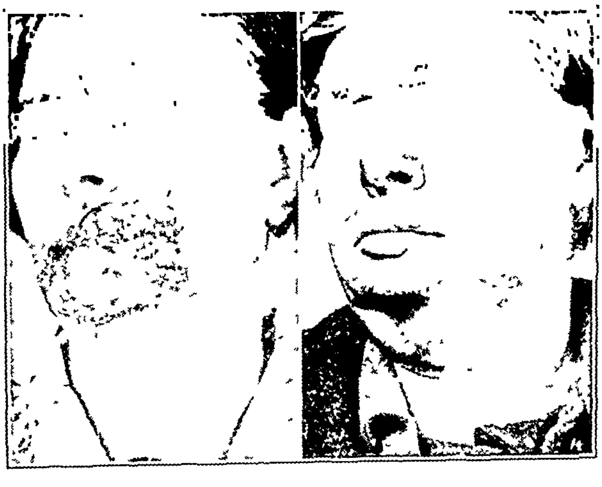

Fig. 2.—Large squamous cell carcinoma, grade 1, which has remained well for ten years following a course of Coutard therapy supplemented by radium needles used in the corner of the mouth and inner cheek.

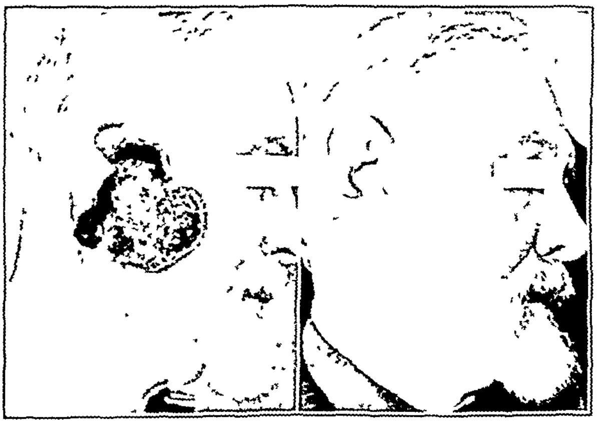

Fig 3.—Large squamous cell carcinoma, grade 2, with involvement of the lower ear which has remained well for five years following the layer radium needle technic.

Although Richards,[7] Hayes Martin[8] and others use the Coutard roentgenologic technic successfully in treating certain intraoral cancers with roentgen rays, we prefer an interstitial radium needle technic for all lesions in the mouth. It is also useful in the care of deep seated lesions on the face and lip. Our needles are patterned after those used by Cade[9] and his associates in England. They contain approximately 0.6 mg. of radium per centimeter of active length, are made of platinum and have a wall thickness of 0.5 to 0.6 mm. The needles found most useful have active lengths of 0.5, 1.5 and 4 cm. In order that dosage may be easily estimated they are always left in place for exactly seven days. With the exception of rounded tumors in the body of the tongue and large masses of lymph nodes, practically all the carcinomas considered in this paper either grow as flat tumors or can be reduced to such layers by electrosurgical means. Treatment is administered by inserting the needles into the base of the layer of growing tissue in patterns designed to deliver not less than 6,000 r to all the tumor cells.

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[3] Martin, C. L Squamous Cell Carcinoma of the Skin, Am J. Roentgenol. **28:** 728, 1932. Martin, J. M., and Martin, C. L.. The Fractional Dose Method in the X-Ray Treatment of Skin Malignancies, South M. J. **27:** 391, 1924.

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[8] Martin, H E; Munster, H., and Sugarbaker, E. D.: Cancer of the Tongue, Arch Surg. **41:** 888 (Oct) 1940

[9] Cade, S.: *Malignant Disease and Its Treatment by Radium,* Bristol, John Wright & Sons, Ltd, 1940.

A diagram which was worked out with the aid of Quimby and published in a previous paper[10] makes the estimation of dosage at various points in the tumor relatively simple. Rounded tumors are treated by inserting the needles in two or more theoretic layers placed one above another. With such a plan the only variable is the arrangement of the needles, and the experienced operator can devise patterns which will effectively irradiate tumors of all shapes and sizes.

In our earlier work, radon seeds could not be obtained and it was found necessary to devise needle technics as a substitute. We were soon convinced that the needles offered certain advantages, which were described in a paper[11] published in 1932. No radon implants are used at the present time.

REACTIONS TO TREATMENT

Too much emphasis cannot be placed on the fact that a rather severe reaction always follows the proper use of a carcinolytic dose of x-rays or radium. This reaction, which consists in a pronounced erythema on the skin and a grayish discoloration in the mucous membranes of the mouth, appears in a week or ten days after the treatment is finished. It is not particularly painful and should not be confused with the extremely painful indolent ulcer which may result from high dosage or improper technics. When large areas are treated the epithelium on intact surfaces disappears soon after the reaction reaches its peak, and it is during this period that the neoplastic tissue rapidly melts away. Healing requires from six to eight weeks or even longer, depending on the size of the lesion. It is our custom to apply dressings of boric acid ointment to the external areas each day. Although we are familiar with the warnings issued against the use of this medicament on denuded surfaces, we have observed no ill effects following its application over long periods of time and we are impressed with the comfort which it affords the patients. Treatment reactions on the mucous surfaces of the lips are more painful than those on the skin, and the frequent application of metycaine hydrochloride ointment 5 per cent gives much relief. Reactions inside the mouth are treated with the frequent use of alkaline mouth washes and the application of a 5 per cent solution of merbromin to the affected region after each feeding.

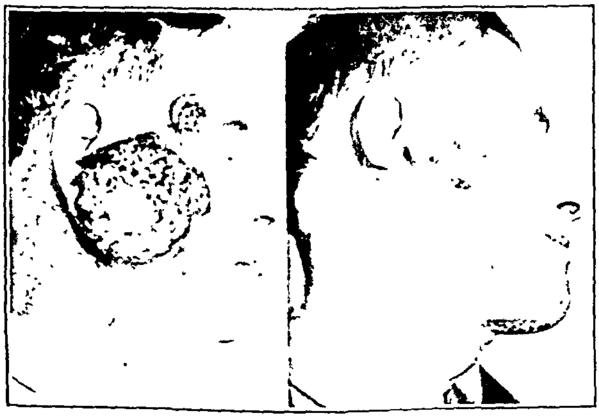

Fig. 4.—Large mixed squamous and basal cell carcinoma with extensive subcutaneous infiltration which has remained well for three years following the layer radium needle technic. The deep scar on the cheek followed coagulation of a recurrent nodule.

The radiologist who is conscientious in his efforts to deliver a carcinolytic dose to every tumor treated will encounter a few cases in which the reaction does not heal promptly but produces a slough instead. Although such sequelae are usually attributed to errors in technic, some of them are undoubtedly due to other factors, such as poor blood supply, excessive fibrosis and previous types of therapy. Superficial sloughs on the cutaneous surfaces respond well to vitamin A and D ointment or cod liver oil ointment used over a long period of time. Sloughs in the tongue or cheek and devitalized areas in the jaw which do not separate after several months of palliative therapy should be removed surgically. Small areas of necrosis in the mouth often result from low grade infections and may be efficiently treated with penicillin lozenges, which not only induce healing but may produce immediate relief of discomfort. Large doses of irradiation applied to the ear or nose may produce an extremely painful chondritis, the discomfort of which is promptly relieved by removal of the involved cartilage.

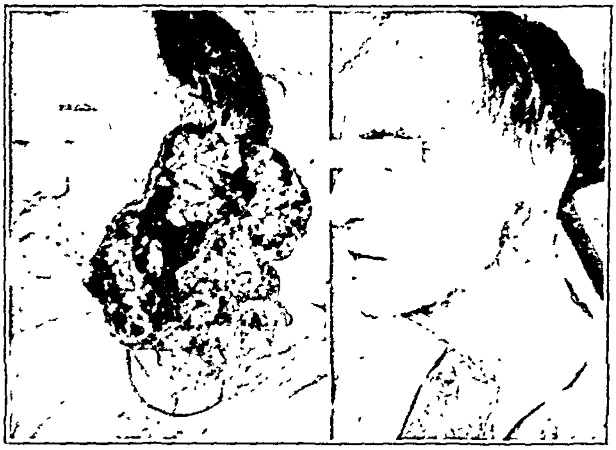

Fig. 5.—Large squamous cell carcinoma, grade 4, which was treated by electrosurgical means plus the Coutard technic. The neck was smoothly healed when the patient died of pulmonary metastases eight months later.

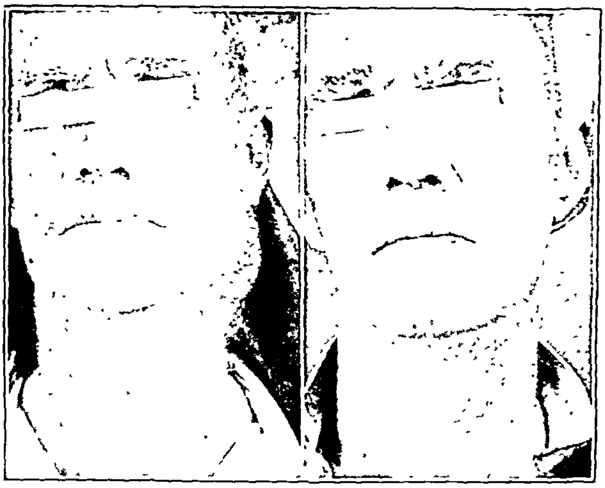

Fig. 6.—Large mass of squamous cell carcinoma in upper cervical nodes diagnosed by needle biopsy which has remained well for six years following the combined radium needle and Coutard technic.

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[10] Martin, C. L.: The Layer Technique in Radium Needle Therapy, Am. J. Roentgenol. 48: 377, 1942.

[11] Martin, C. L.: Small Radium Needles Versus Radon Implants, Am. J. Roentgenol. 27: 240, 1932.

REPETITION OF TREATMENT

The radiologist charged with the care of a cancer patient should make an all-out effort to produce a cure with his first series of treatments because the second attempt is never very effective and may actually produce harmful results. If cures are to be produced the bold application of an efficient technic is preferable to a cautious approach, even though a few untoward sequelae may result. The patient with cancer of the skin who has received relatively small doses of roentgen rays given once a week over long periods of time by the "watch and wait" method constitutes one of our most difficult problems. In these cases the tumor bed has been damaged so that the normal tissues may not be able to recover from carcinolytic doses. When small malignant nodules persist or small recurrences are observed later in heavily irradiated areas it is our custom to remove them by electrosurgical intervention unless the normal tissues are in unusually good condition. When surgical procedures are contraindicated and heavy irradiation is applied a second time as a lifesaving procedure, a slough often results.

CANCER OF THE SKIN OF THE FACE AND NECK

Carcinomas of the skin of the forehead, temples, cheeks and neck, regardless of their size or histologic structure, may be treated successfully with irradiation.

Table 1.—*Proved Advanced Cancer of Face and Lip, 1936 to 1943*

Site	Total No. of Cases	Cases Traced	Living and Well (Yrs.) 10	8	7	6	5	4	3	Well 3 or More Yrs.
Ear..............	19	12	..	..	..	..	..	1	4	5
Face and neck....	44	21	1	..	..	..	3	1	5	10
Lip..............	56	33	2	3	3	1	..	2	3	14
	119	66	3	3	3	1	3	4	12	29

No attempt is made to separate the basal cell and squamous cell lesions, because many of the larger tumors contain cells of both types and it seems best to use technics capable of destroying the most resistant cells which may be encountered in all cases. Tumors measuring less than 2 cm. in diameter are treated by the superficial roentgenologic technic; the large tumors are treated with the Coutard technic if they are fairly superficial and with radium needles if there is much infiltration.

Tumors of the eyelids are treated with the superficial roentgenologic technic. After a topical anesthesia has been produced by placing several drops of a 4 per cent solution of cocaine in the conjunctival sac, a gold-plated brass shield is slipped under the lids. The treatment cone is then placed directly over an opening cut in a piece of lead foil placed so that the tumor and a rim of normal tissue is exposed. With such shielding at the time of each treatment the conjunctiva is not damaged and healing produces a minimum of scarring and deformity. Malignant tumors of the inner canthus may be treated in this manner when they are superficial. However, they frequently are accompanied by deep induration which extends well down into the orbit. This complication is best treated with a layer of weak radium needles with active lengths of 1.5 cm. plunged into the inner portion of the orbit so that they extend well beyond the palpable induration. Cancers of the bulbar conjunctiva respond well to the superficial roentgenologic technic and heal with no demonstrable damage to the eyeball. Two such cases have been followed for eight years, and both patients have good vision. The procedure is the same as that used for the lids, except that an eyelid retractor is inserted at the time of each treatment and the lead foil shield is placed directly over the lesion on the eyeball. The lens must be carefully protected to prevent the formation of a cataract.

Small superficial carcinomas on the nose may be eradicated with the superficial roentgenologic technic, but large lesions, particularly those which invade cartilage, are removed by surgical diathermy. When deep invasion has occurred, the entire nose is removed with the cutting current and the Coutard technic is applied to a circular 7 cm. port which includes the entire nasal passage. After healing has occurred an artificial nose attached to a pair of glasses hides the defect rather effectively.

Carcinoma of the ear presents a similar problem. Although small lesions confined to the skin respond well to the superficial roentgenologic technic, most of the patients coming into our clinic manifest cartilaginous invasion. When the disease is limited to the auricle the involved portion is quickly removed with the cutting current and no attempt is made to approximate the skin edges. For the best results the visible edge of cartilage should be cut away so that the skin edges are in contact. Large carcinomas almost invariably invade the skin in front of or behind the auricle and often undermine this structure. When this complication occurs, the overlying portion of the auricle is removed and radium needles are inserted into the remaining layer of involved tissue on the side of the head. Invasion of the auditory canal is handled by stitching small radium needles into the walls of the passage. In our experience no advanced cancer of the ear has responded well to irradiation without removal of the overlying cartilage, and we consider this procedure an essential part of the technic.

All superficial carcinomas of the lip measuring less than 2 cm. in diameter are treated with the superficial roentgenologic technic, and the cosmetic results are far superior to those obtained with surgical means. Large tumors and those showing deep induration respond extremely well to the layer radium needle technic, and since all normal tissue is salvaged the cosmetic results compare favorably with those obtained by radical surgical intervention. The procedure is simplified by the removal of all proliferating tissue before the implantation is performed.

Although a large number of small cancers of the face and lip have been successfully treated by the technic previously outlined, many of them have not been studied by biopsy and they are not included in the statistical portion of this paper. A series of 119 well advanced, histologically proved carcinomas of the face and lip is reviewed in table 1. All these tumors except a few large basal cell lesions on the face were of the squamous cell variety. The tumors on the face and neck measured from 3 to 9 cm. in diameter, and palpable nodes were detected in 8 of the 44 cases. All 19 cases of carcinoma of the ear showed extension to the skin outside the auricle, and there was a palpable cervical lymph node in 1 case. The tumors of the lip measured from 2 to 5 cm. in diameter, and palpable cervical nodes were present in 17 of the 56 cases. The patients reviewed in this paper come from a floating population, and we have reason to believe that some of those not traced are well. Many of them were old at the time of treatment, and we are fairly certain that some of the deaths were not due to cancer. However, if it be assumed that all the untraced patients are dead, it can still be stated that almost one fourth of the entire number, and nearly half of the patients traced, were living and well at the end of three years

CANCER OF THE MOUTH

It is highly desirable that all teeth situated adjacent to the treatment zone be removed and the gums be healed before irradiation therapy is started

Large carcinomas of the tongue constitute the most formidable problem of all the tumors under consideration. Most of the lesions on the lateral borders and tip can be reduced to flat layers for radium needle implantation by surgical diathermy Masses in the center of the tongue and those situated well back on the root are treated by plunging needles with 1.5 cm. active lengths vertically into the tumors Good exposure is obtained by pulling the tongue well out of the mouth by means of a towel clamp fixed in the tip All needles placed in the mouth must be securely sutured in place. The operator is called on to exercise some ingenuity in devising a pattern which will irradiate all malignant tissue evenly, particularly when irregular extensions are found in the floor of the mouth.

Primary cancers in the floor of the mouth usually are found beneath the anterior portion of the tongue and may extend onto the alveolar margins The best results are obtained by placing a vertical row of the smallest needles along the inner edges of the gums and augmenting them with a few 1.5 cm needles placed transversely under the tumor. Contrary to the general belief, few such cases have shown serious damage to the bone.

Carcinomas of the mucosa of the cheek are usually flat tumors, and they lend themselves naturally to the layer radium needle technic. Extension onto the palate, alveolus and floor of the mouth must be carefully implanted, and each case presents a problem in geometry. The most difficult extensions are those found deep in the cheek just external to the ramus of the mandible and above and outside the upper alveolar margin. Even when all the cancer in this region is eradicated the resulting fibrosis renders complete opening of the mouth impossible, and in a few cases it has been necessary to remove several incisors so that food might be taken in sufficient quantities.

Primary lesions on the anterior part of the pillar and soft palate are always flat and are easily implanted. However, the insertion of needles into the base of a tumor on the hard palate presents a real problem. This procedure is greatly facilitated by injecting a liberal amount of local anesthetic under the membranes beneath the tumor. When the needles are inserted into these edematous membranes they tend to stay in place. Many radiologists prefer contact applicators for such lesions, but some of our implanted tumors have shown good results with the insertion of needles.

After needle implantations are carried out the patterns are studied in roentgenograms of the involved area. Technical errors may be easily corrected by changing the positions of incorrectly placed needles. This checking procedure constitutes a real advantage over radon seed implantations.

A review of 113 cases of well advanced cancer of the mouth is presented in table 2. All the tumors in this series were proved squamous cell carcinomas. The tumors of the tongue measured from 2 to 4 cm. in diameter, and cervical nodes were palpable in 7 of the 36 cases. The lesions on the floor of the mouth measured from 2 to 5 cm. in diameter, and cervical nodes were palpable in 3 of the 12 cases. The lesions on the cheek and palate measured from 2 to 4 cm. in diameter, and cervical nodes were palpable in 8 of the 65 cases. The end results were about the same as those obtained with treatment of the same type of cancer on the face and lip.

METASTATIC CERVICAL LYMPH NODES

All the malignant tumors considered in this paper may metastasize to the cervical lymph nodes, and the care of the neck is an integral part of the treatment. Wilson's[12] recent review of the literature on this subject illustrates the existing diversity of opinion relative to proper therapeutic procedures. Many surgeons are convinced that irradiation produces no cures and that block dissection is the method of choice. A review of published reports indicates that surgical intervention offers a chance of cure in only a limited group of cases with early glandular involvement.

TABLE 2.—*Proved Squamous Cell Carcinoma of Mouth, 1935 to 1943*

Site	Total No. of Cases	Cases Traced	Living and Well (Yrs.) 10	9	7	6	5	4	3	Well 3 or More Yrs.
Tongue........	36	21	..	..	2	..	2	..	3	7
Floor of mouth..	12	10	1	..	1	..	..	2	3	7
Cheek and palate	65	31	1	2	..	4	1	3	4	15
	113	62	2	2	3	4	3	5	10	29

It is true that many of the published irradiation technics are of little value. In our opinion cervical nodes containing squamous cell carcinoma cannot be cured with external irradiation alone because the carcinolytic dose for cancer in lymph nodes is considerably larger than that required for the primary lesion. Although Evans and Griffith[13] have obtained some promising results with implanted radium needles in a few cases, it is our opinion that a combination of interstitial therapy and external irradiation offers a better chance of cure. The combined method is advantageous because the damage to normal tissues is less when part of the dose is given with radium and part with roentgen rays. Hayes Martin[14] has reported 46 cases with proved metastatic cancer in cervical nodes living and well five years after the implantation of radon seeds into the nodes following the external administration of 5,000 to 8,000 r by the Coutard method.

Our own procedure, described in detail in two previous papers,[15] consists in a combination of the layer radium needle technic and the Coutard technic given simultaneously. The doses are large and the reactions rather severe. After healing has occurred the overlying skin may show some atrophy, and a diffuse fibrosis may be felt in the subcutaneous tissues when the treated area is large. In some cases the glands are reduced to hard, fibrosed nodules which remain quiescent, while in others they disappear completely. Patients sometimes complain of mild discomfort in the treated area of the type observed with any large scar, but most of them are quite comfortable. A moderate edema may persist about the treated area for a number of months because of the obstruction of the lymphatics by fibrosis. In a few cases the overlying skin has broken down several years after treatment, but for the most part these complications may be attributed to errors in technic and have been easily remedied by plastic surgery.

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[12] Wilson, H Results of the Treatment of Metastatic Carcinoma in the Cervical Lymph Nodes, Surg, Gynec & Obst **75:** 403, 1942.

[13] Evans, M B, and Griffith, H D Dosage Control of Interstitial Radium Treatments by Direct Measurement of Skin Dosage Rate, Brit. J Radiol **14:** 377, 1941

[14] Martin, H E · Treatment of Cervical Metastatic Cancer, Ann. Surg **114:** 972, 1941

[15] Martin, C L Treatment of Metastatic Cervical Lymph Nodes, Am J Roentgenol **41:** 819, 1939, Treatment of Metastatic Cervical Lymph Nodes with Irradiation, Tr. Sect. Laryng. Otol & Rhin A M. A, 1940

Tissue has not been routinely removed from lymph nodes for biopsy, but a study of the 19 cases of proved carcinoma presented in table 3 indicates the effectiveness of the method. Of the 138 cases reported in table 4 palpable nodes were present and treated simultaneously with the proved primary lesion in 58 instances and appeared and were treated after healing of a proved primary lesion in 80. All these nodes were hard and nontender, and many of them were considered inoperable. Only a few glands did not show decided regression after the reaction had subsided. In a few cases with multiple glands treatment was applied to both sides of the neck with a good primary result. The three year salvage of 21 per cent of all the patients treated and almost a third of the traced cases indicates that irradiation of metastatic cervical nodes deserves more consideration than it has been accorded in the past.

TABLE 3.—*Patients with Proved Squamous Cell Carcinoma in Cervical Nodes*

Site of Primary Lesion	Total No. of Cases	Cases Traced	Living and Well (Yrs.) 7	6	5	3	Well 3 or More Yrs.
Lip..................	8	6	1	..	..	1	2
Face..................	4	2	2	..	..	..	2
Undetermined.......	7	5	..	1	1	..	2
	19	13	3	1	1	1	6

TABLE 4.—*All Patients with Palpable Cervical Lymph Nodes Secondary to Squamous Cell Carcinoma of Face and Mouth, 1936 to 1943*

Primary Lesion	Total No. of Cases	No. Traced	Living and Well with No Palpable Nodes (Yrs.) 10	9	8	7	6	5	4	3	Well 3 or More Yrs.
Face......	21	10	1	..	..	2	..	1	..	..	4
Lip........	58	43	..	..	..	6	1	2	1	4	14
Floor of mouth..	6	5	1	..	..	1	..	..	..	..	2
Cheek and palate...	25	14	..	2	1	1	1	..	..	..	5
Tongue...	25	18	..	..	..	2	..	..	..	1	3
Ear.......	3	2	..	..	..	..	..	..	..	1	1
	138	92	2	2	1	12	2	3	1	6	29

PALLIATION

Although the tables included in this paper have been compiled in an effort to illustrate the curative value of irradiation therapy, something should be said of its palliative value as well. It is our custom to give some type of therapy to every patient, regardless of the size or extent of his carcinoma, and the improvement produced cannot be evaluated in a paper dealing with cure rates. Even though these patients may not live three to five years, the eradication of large unsightly tumors and the relief of discomfort by the judicious use of irradiation therapy is still a worth while procedure.

SUMMARY

Cancer of the skin is common in the Southwestern states, where it constitutes approximately 30 per cent of all the malignant lesions treated. The incidence of cancer of the mouth is also high. The absolute three year cure rate in an unselected group of patients with advanced cancer of the face, lip, mouth and cervical nodes treated with irradiation was found to be approximately 25 per cent. The relative three year cure rate in a group of unselected advanced cases was above 40 per cent.

ABSTRACT OF DISCUSSION

Dr. Lyell C. Kinney, San Diego, Calif.: We are indebted to Dr. Martin for the presentation of his method of handling cervical lymph nodes. His absolute cures on a three year basis were 31.5 per cent, and on a five-year basis 26.3 per cent. My associates and I necessarily have had to follow the more traditional and orthodox method of treatment in our work because we have not had the large amount of radium in needles that Dr. Martin has had. In cervical lymph nodes which were small and movable, we have insisted that they be excised or that a radical neck dissection be made. With lymph nodes that were not movable and did not lend themselves to complete excision we proceeded much along Dr. Martin's course. We have given deep therapy followed with implantation of gold seeds. Likewise, in our intraoral work we are not using needles primarily. We are using intraoral roentgen radiation in addition to external radiation, following it where necessary with implantation of gold seeds to bring it up to our estimated dosage. We have found the intraoral roentgen radiation an extremely satisfactory method of handling intraoral cancers, particularly pharynx and tonsillar lesions, those of the cheek and the floor of the mouth. We follow closely Dr. Martin's technic on skin, eyelid and lip, and we have had practically no ocular damage. The important thing in Dr. Martin's paper is the fact that this must be always an all-out attack. No matter what the program is, whether it is a geometrical arrangement of small radium needles plus x-ray, or surgery, the program must be worked out at the onset of the case; the whole of the ammunition must be administered at once, because it is only once that you have the opportunity of treating these patients. We have found it disastrous to try to repeat the radiation therapy or to treat energetically recurrences that have been treated as Dr. Martin has indicated. On the other hand, as Dr. Martin suggests, a small amount of judicial irradiation will prove palliative in certain cases; but there is never another opportunity to cure them.

Dr. Henry Ullmann, Santa Barbara, Calif.: I also see a high percentage of skin and lip cancers in Santa Barbara and I believe the same incidence will be found throughout the Southwest. I have, for many years, been treating with a half value layer of 0.6 mm. of aluminum at a target skin distance of 21 to 22 cm. and lately with a half value layer of 1.6 mm. of aluminum at 14 cm. My total dosage is the same—4,400 to 5,000 r depending on the size of the lesion—divided into two doses a week apart or three doses given every other day. The reaction is usually at its maximum during the second week after the last dose and the area is healed in six to eight weeks. Healing may be occasionally delayed. A mild erythema followed by a slow disappearance of the tumor has been seen several times, as has a complete clearing of the cutaneous reaction in six to eight weeks with the tumor still visible. The tumor disappears eventually, sometimes after a delay of another month. I also use high voltage—a half value layer of 1.15 mm. of copper at a target skin distance of 50 cm. for large lesions. The cosmetic results are excellent. I usually give 4,500 to 5,000 r measured on the skin, as my high voltage dosage is controlled by a "Victoreen Integron III" with the chamber on the skin in the center of the field. I have not used a thorium filter for superficial lesions. I am using gold radon seeds with and without the addition of roentgen rays, but Dr. Martin's results have about persuaded me to get some low intensity needles. Tonsillar and pharyngeal lesions are all treated with the roentgen ray. I should like to ask Dr. Martin how often he sees a late radiation breakdown following these superficial treatments. In cases of mine the incidence has been 3.6 per cent—I am never worried about these breakdowns, as they frequently heal, with less scar than before, in two to three months under a regimen of mild ointments. I use an aloe vera ointment. The breakdown may follow a severe sunburn or other trauma and occurrence is commonest during the second year post radiation. I use this same ointment during the postradiation reaction. I am hesitant about using metycaine hydrochloride ointment 5 per cent because of the number of patients whose skins are sensitive or become sensitive to the prolonged use of this drug. I almost never retreat a superficial lesion with radiation, and I also do not differentiate between a basal or squamous cell lesion in planning dosage. I treat eyelids in the same way but use phenacaine hydrochloride instead of cocaine as it is less drying. I, also, have seen no ocular injury. I should like to ask Dr. Martin how he protects the lens when the conjunctival lesion extends to the limbus.

Dr. Tibor de Cholnoky, New York: As a surgeon I do not agree with Dr. Martin that the operation for cancer is easy and the roentgen therapy is difficult. Both are difficult, and a great deal of thought is required in deciding which to use. The results Dr. Martin has shown are gratifying, although most of his cases were squamous cell cancer of the exuberant variety, which is frequently a local growth, forming metastases late and responding readily to radiation therapy. In the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital the number of cases of basal and squamous cell carcinoma treated by irradiation is steadily decreasing, and the preference is for radical surgical excision. A statistical study of 1,062 cases published in the *Annals of Surgery* (**122:**88-101 [July] 1945) emphasizes the usefulness of surgical treatment of cancer of the face. In my experience the carefully executed surgical excision has resulted in better cosmetic results and a higher cure rate, even in more advanced cancer. Although radiation therapy controls some of the basal and squamous cell cancers of the face, the scars and deformities often require corrective surgical intervention. To perform a radical operation followed by reconstruction at the same time is preferable. I was glad to hear Dr. Martin comment favorably on electrocoagulation. It is a useful procedure in the treatment of recurrent and advanced cancer, but only in the hands of a surgeon, for such radical removal of cancerous tissue is often a major operation requiring immediate repair. Basal and squamous cell carcinoma of the skin of the face may be treated alike with wide tridimensional excision, not requiring dissection of the lymph nodes. However, squamous cell carcinoma of the vermilion border of the lip and the mucous membrane as well as that of the ear, with the exception of the protuberant variety, often requires dissection of the regional lymph nodes. Complete dissection of the cervical lymph nodes to prevent recurrence is indicated if the lymph node is involved. This type of dissection is a tedious operation requiring special training. The high percentage of cases which Dr. Martin has just reported as arrested by radiation therapy is a surprise to me. One rarely sees a patient with multiple involvement of the lymph nodes which was proved by biopsy survive five or ten years after radiation therapy. I have seen a large number of failures after radical operative intervention, but I believe that there are more following radiation therapy.

Dr. L. Henry Garland, San Francisco: I should like to ask Dr. Martin to comment on the incidence of pharyngeal contraction, trismus, and so forth, five years after heavy radium and roentgen irradiation around the upper portion of the neck. His percentage of cures in advanced cancer of the ear astounds me: 42 per cent of three year cures! Dr. N. J. Howard recently reviewed the cases of cancer of the ear seen at Stanford and the County Hospital here during the last sixteen years, and he found not only an extremely low percentage of cures, whether operated on or irradiated, but also a high percentage of metastases to the lymph nodes—about 60 per cent of cases, if followed long enough. Some of them developed very late. I should like to ask Dr. Martin in what percentage of his cases of cancer of the skin of the ear metastases to the lymph nodes developed. Will he tell us his incidence of recurrence in treatment of cancer of the skin of the ear with doses of around 4,000 or 6,000 r?

Dr. Charles L. Martin, Dallas, Texas: All the doses of roentgen rays noted in the paper were measured in air. We occasionally see late ulcerations in radiation scars. If they do not respond to the local application of vitamin ointments they are removed surgically. Most of the cancers described in the paper are squamous cell carcinomas, but some of those on the face are of the basal cell variety, and some are mixed. All doses given are large enough to take care of squamous cell lesions. Cancers of the conjunctiva did not extend out over the lens, which was shielded. When the lens is included in the treatment field cataracts usually appear at a later date. It is true that some patients are sensitive to metycaine hydrochloride ointment, but it has been useful in the treatment of temporary painful radiation reactions on the lip. Dr. de Cholnoky's critical discussion is typical of most surgeons' reaction to our work, and I am quite accustomed to it. On the whole our cosmetic results are better than those produced by surgical procedures, and I will be glad to match results with him, scar for scar. His objection to the use of electrosurgery is not well founded, because radiologists were using this method long before it was discovered by the surgeons. My father taught me to use it years ago, and I think we do it rather well. His statement that he has never seen a metastatic cervical lymph node cured by irradiation is surprising, since a sizable number of five year cures in such cases has been reported by the Memorial Hospital in his own city. I hope I may have a chance to show him some of our cases. If they are not cured they have at least remained free of all evidence of the disease for long periods of time. Our treatment of the neck has produced none of the contractions of the pharynx or larynx mentioned by Dr. Garland. Fibrosis of deep seated lesions in the cheek sometimes closes the mouth so tightly that it cannot be opened. No efficient treatment of this complication has been devised in our clinic. I can certainly agree with Dr. Garland's observation that advanced cancer of the ear is poorly treated in most clinics. After growth extends beyond the ear surgical intervention alone has little to offer, and we are enthusiastic about the use of low intensity radium needles plus electrosurgery.

The Gastroenterologic Aspects of Psychosomatic Medicine.—A normal digestive tract cannot have continuous emotional stimuli reach it day after day, week after week, month after month, and even year after year, and still remain normal without showing evidence of physiologic and structural change. We, however, have failed to recognize these changes. Increasing clinical experience, with adequate laboratory and roentgenologic evidence, must show some deviation from the normal if a patient has symptoms. A normal digestive tract, working harmoniously with a normal and nonirritating diet, should give no symptoms. Symptoms arise only as the result of inflammatory and infectious disease, poisons, parasites, neoplastic changes, dietary indiscretions or abnormal nerve impulses. Any gastroenterologist with a broad clinical experience will honestly admit that the majority of his patients have a symptom complex for which no organic basis can be found. We have been much too busy in the laboratory developing diagnostic criteria, making test tube diagnoses, using chemotherapy and antibiotic therapy and forgetting that we are treating a patient who is in a troubled world with its many insults and who is ill because he has a maladjusted emotional household.—Portis, Sidney A.: *Rev. Gastroenterol.*, June 1947.

THYROTOXIC CRISIS

An Analysis of the Thirty-Six Cases Seen at the Massachusetts General Hospital During the Past Twenty-Five Years

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Thyrotoxic crisis ("thyroid storm"), even with improved methods of treating hyperthyroidism, is by no means an extinct phenomenon. Of a total of 2,033 thyrotoxic patients admitted to the wards of the Massachusetts General Hospital in the past twenty-five years, 36 have experienced a toxic crisis. We have thought it worth while to place the analysis of these cases on record since so few[1] of the opinions expressed in the literature of thyroid storm are based on experience with large series of patients.

Twenty-five of these storms (hereinafter called "surgical") have followed the 1,383 operations performed on these patients; the remaining 11 storms (hereinafter called "medical") have represented an acute breakdown of thermal regulation in patients suffering from fulminating thyrotoxicosis. Eight of the medical and 16 of the surgical storms resulted in the death of the patient.

In our view thyroid crisis is not strictly a complication of thyrotoxicosis but an intrinsic feature of the disease. Like ketosis in diabetes mellitus, it is the inevitable denouement of the disease if it be severe enough. Our conception of storm is essentially that it represents the inability of the patient any longer to adjust to the strain imposed by the hyperthyroidism. It might be called decompensated thyrotoxicosis.

We are not in agreement with those who would attempt to draw a fundamental distinction between the medical and the surgical storms. Like diabetic acidosis, storm may be initiated or its onset hastened by intercurrent complicating factors such as infection and trauma (operative or otherwise). Therefore, our definition of storm is a life-endangering augmentation of the symptoms of thryotoxicosis in which the patient's response is out of proportion to the exciting stimulus, whatever its nature (thyroidectomy, pneumonia or wound sepsis). We insert the qualifying adjective "life-endangering" to exclude the mild to moderate febrile reactions which almost invariably follow thyroidectomy in patients whose metabolic rate has not been brought to a normal level. Such reactions differ only quantitatively from the thyroid crisis. They are storms in miniature.

The symptomatology which develops as the denouement is approached depends on the relative vulnerability of the great bodily systems (central nervous system, cardiovascular system and hepatorenal system) subjected to stress by the thyrotoxicosis. The terminal clinical signs and symptoms and the observations at necropsy emphasize a breakdown in one or more of these systems. There are no pathognomonic features common to all cases.

We agree with Buxton[2] that thyroid crisis is a *syndrome* of *many* facets and not a specific entity. Death in this state results from the various complications which are associated with the increased metabolism, and which are often inadequately comprehended and treated.

Table 1 summarizes the number of hospital admissions for thyrotoxicosis, the number of thyroidectomies performed and the number of medical and surgical storms at the Massachusetts General Hospital in the past 25 years.

The season of the year exerted but little influence on the frequency of thyroid crisis. Our data do not support the finding of Crile[3] that storm occurs 2.4 times as commonly during the hot summer months as during the remainder of the year. We have found a rather uniform distribution of crises during the various seasons. If anything, storms have been less frequent during the hot than during the cold months.

Table 1.—*Summary of Data*

Year	Admissions for Thyrotoxicosis	Operation	Surgical Storms	Medical Storms
1921	45	20	0	1
1922	81	48	0	0
1923	75	51	1	0
1924	80	67	1	0
1925	73	55	1	0
1926	68	60	0	0
1927	57	41	0	0
1928	56	53	0	0
1929	72	62	1	0
1930	87	61	1	0
1931	67	54	1	0
1932	70	60	1	2
1933	63	55	4	0
1934	95	78	2	0
1935	90	68	1	0
1936	82	57	3	1
1937	129	89	1	1
1938	106	76	0	0
1939	137	81	1	1
1940	105	45	1	1
1941	108	53	1	0
1942	87	31	2	0
1943	77	36	0	0
1944	74	48	1	2
1945	49	34	0	1
1946			1	1
Total	2,033	1,383	25	11

The age incidence of thyroid storms is shown in table 2. The average age of patients experiencing a medical storm was 49.4 years; that of patients experiencing a surgical storm was 46 years.

Of the 11 medical storms, 1 occurred in a man and 10 in women; of the surgical storms, 8 occurred in men and 17 in women. The 1:3 ratio of males to females experiencing crisis is lower than the ratio for the incidence of the disease in the two sexes.[4] This accords well with the clinical impression that thyrotoxicosis in the male is likely to be severer than that in the female.

Eight of the medical and 12 of the surgical storms occurred in patients with toxic diffuse goiter; 3 of the medical and 13 of the surgical storms in patients with toxic nodular goiter. The relative toxicity of the two types of goiter, as gaged by the basal metabolic rate

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From the Thyroid Clinic, Massachusetts General Hospital.

Henry P. Walcott fellow, Harvard University (Dr. McArthur).

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[2] Buxton, R. W.: The Problem of Thyroid Crisis, Surgery **16**: 748-755, 1944.

[3] Crile, G.: Management of the Patient with Hyperthyroidism: Preoperative and Postoperative Care, S. Clin. North America **16**: 1051-1059, 1936.

[4] Means, J. H.: The Thyroid and Its Diseases, Philadelphia, J. B. Lippincott Company, 1937.

on admission and the amount of weight lost, was almost identical. The mortality rates for the storms occurring in patients with diffuse or nodular goiter were likewise almost the same.

The duration of the thyrotoxicosis in patients having a toxic crisis is indicated in table 3. The majority of the storms occurred in patients with thyrotoxicosis of relatively short duration.

The nutritional state of these patients is shown in table 4, which summarizes the amount of weight lost between the time of onset of the thyrotoxicosis and the time of admission to the hospital. The majority of the patients were thin, some so emaciated that they presented the appearance of progressive muscular atrophy. There was surprisingly little evidence of gross vitamin deficiency, except for redness and smoothness of the edges of the tongue in a few cases.

The degree of toxicity may be estimated in another way by considering the basal metabolic rate at entry. Six of the patients with medical storm were too ill to have their metabolic rates determined; the average rate of the remaining five was + 70 per cent. The metabolic rate was not determined in 1 patient in whom a toxic crisis developed after an emergency operative intervention for intestinal obstruction; the average admission rate of the other patients in whom surgical storm developed was + 49 per cent. The frequency distribution for both groups as a whole is shown in table 5. It will be noted that the patients experiencing medical storm were much more toxic than those having surgical storm, both by the criteria of the amount of weight lost and the basal metabolic rate.

TABLE 2.—*Age Incidence of Thyroid Storms*

Medical		Surgical	
Age	No.	Age	No.
0 to 9	0	0 to 9	0
10 to 19	0	10 to 19	4
20 to 29	1	20 to 29	3
30 to 39	2	30 to 39	2
40 to 49	3	40 to 49	3
50 to 59	2	50 to 59	6
60 to 69	3	60 to 69	6
70 to 79	0	70 to 79	1
Average age 49.4 years		Average age 46 years	

TABLE 3.—*Duration of Symptoms of Thyrotoxicosis*

Duration, Yrs.	Number of Patients with Medical Storm	Number of Patients with Surgical Storm
Less than 1	4	7
1 to 2	5	8
2 to 5	1	6
5 to 10	1	2
Over 10	0	1
Uncertain	0	1

The types of therapy received by these patients prior to their admission to the hospital is summarized in table 6. Only 11 of the 36 patients were receiving iodine. All 5 of the previously iodinized patients who had medical storms and 4 of the 6 iodinized patients who had surgical storms were severely toxic at entry despite the iodine therapy.

The incidence of severe complicating diseases and their nature is presented in table 7. Cardiac complications were by far the commonest. Twenty-three of the 36 patients had some type of heart disease, further complicated by congestive failure in 13 instances. That these complications exerted a significant, often decisive, influence on the survival of the patients is clear from table 9, which shows the average age and incidence of serious complicating diseases in survivors and fatalities from storm. Acute toxic psychosis proved to be an ominous sign. Two patients who exhibited this phenomenon preoperatively later died of storm.

TABLE 4.—*Amount of Weight Lost*

Pounds	Number of Patients with Medical Storm	Number of Patients with Surgical Storm
0 to 10	0	4
11 to 20	0	5
21 to 30	1	4
31 to 40	2	4
41 to 50	2	2
51 to 60	1	3
61 to 70	1	0
71 to 80	1	0
Uncertain	3	3

Autopsies were obtained in 12 of the 24 patients who died. The significant pathologic findings are summarized in table 8. Besides the high incidence of cardiac complications, the autopsies revealed the frequency and importance of pulmonary complications. A surprising finding was the paucity of pathologic changes in the liver. We have no doubt that hepatic damage occurs frequently in patients experiencing storm. Foss, Hunt and McMillan, for example, demonstrated central necrosis and fatty degeneration in the livers of 10 of 11 patients who died of thyrotoxic crisis.[5]

TABLE 5.—*Basal Metabolic Rate on Admission*

Basal Metabolic Rate	Number of Medical Storms	Number of Surgical Storms
Not done	6	1
0 to + 9%	0	1
+10 to +19%	0	0
+20 to +29%	0	7
+30 to +39%	0	1
+40 to +49%	0	3
+50 to +59%	1	3
+60 to +69%	2	6
+70 to +79%	0	0
+80 to +89%	2	2
+90 to +99%	..	1

In the majority of instances it was possible to determine a precipitating factor which provoked the crisis in these dangerously depleted patients. These factors are summarized in table 10. In the group of medical storms, iodine withdrawal appeared to be the commonest precipitant of crisis. As has been emphasized before,[4] this phenomenon argues strongly against the concept of "iodine refractoriness." Digitalis intoxication and streptococcic pneumonia progressed rapidly into thyroid crisis in 2 instances.

TABLE 6.—*Therapy Prior to Hospital Admission*

Medical		Surgical	
Treatment	No. of Patients	Treatment	No. of Patients
None	6	None	15
Iodine	4	Iodine	6
Iodine and x-ray	1	Quinine	1
		Sedation	1
		Uncertain	2

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5. Foss, H. L.; Hunt, H. F., and McMillan, R. M.: The Pathogenesis of Crisis and Death in Hyperthyroidism, J. A. M. A. **113:** 1090-1094 (Sept. 16) 1939.

The majority of surgical storms followed thyroidectomy. These crises were manifest four to sixteen hours (average eight hours) after the operation. Storms blowing up longer than sixteen hours after thyroidectomy proved to be due to bronchopneumonia or wound sepsis. In 3 patients who weathered the immediate postoperative period a crisis developed when hemorrhage requiring secondary suture occurred subsequently.

TABLE 7.—*Incidence of Complicating Disease*

Medical Storms		
Coronary arteriosclerotic heart disease		2
Without congestive failure	1	
With congestive failure	1	
Hypertensive heart disease		2
Without failure	1	
With failure	1	
Hypertensive and coronary heart disease		2
With failure	2	
Congestive failure (nature or underlying disease not established)		2
Bronchopneumonia		2
Acute pelvic abscess		1
Bronchiectasis		1
Surgical Storms		
Coronary arteriosclerotic heart disease		4
Without congestive failure	3	
With congestive failure	1	
Hypertensive heart disease		4
Without failure	3	
With failure	1	
Hypertensive and coronary heart disease		4
With failure	4	
Chronic rheumatic heart disease		1
With failure	1	
Acute rheumatic pancarditis		1
Pyelonephritis		2
Bronchial asthma		1
Acute intestinal obstruction		1
Rheumatoid arthritis		1
Acute toxic psychosis		2

As has been indicated earlier, the toxicity of patients in whom medical storm developed was far greater than that of patients with surgical storm. It was therefore difficult to determine the efficacy of any but emergency treatment in the medical group. To study the extent to which the response to hospital treatment influenced the outcome of storm, the data on the patients who had a toxic crisis after surgical intervention has been analyzed separately. Except for 1 thyrotoxic patient who was admitted with acute intestinal obstruction and had a storm following the lysis of adhesions, all these patients were prepared for operation with rest in bed plus either iodine (21 cases) or iodine and thiouracil (2 cases). On these regimens an increase in weight occurred in 10 patients; the weight remained stationary in 2, and 10 actually lost weight. The same trend is reflected in the basal metabolic rates and pulse rates. The way in which the response to treatment affected survival is indicated in table 11.

TABLE 8.—*Pathologic Findings in Autopsies of Twelve Patients Who Died of Thyroid Storm*

Heart	
Coronary arteriosclerosis	2
Cardiac hypertrophy	6
Chronic rheumatic heart disease	2
Acute rheumatic pancarditis	1
Acute focal myocarditis with fatty degeneration of the myocardium	1
Liver	
Chronic passive congestion	2
Central necrosis	1
Fatty metamorphosis	1
Lungs	
Bronchopneumonia	8
Bronchitis	5
Tracheitis	3
Pulmonary edema	5
Atelectasis	3
Miscellaneous	
Acute and chronic peritonitis with acute pelvic abscess	1
Acute mediastinitis	2

Subtotal thyroidectomy was performed in 13 instances and hemithyroidectomy in 11. The type of anesthesia employed did not materially affect the postoperative course. The oncoming storm could not be predicted accurately from the intraoperative reaction, although many of these patients showed alarming elevations of pulse rate and blood pressure during the operation.

It is clear from table 11 that there was a significantly greater toxicity in patients who died of postoperative storm than in survivors. Their initial loss of weight was almost three times as great and on admission their basal metabolic rates were higher. Serious complicating diseases were three times as common in the fatal cases. The average gain in weight during the preoperative period in both groups was 2½ pounds (1.1 Kg.); a relatively insignificant increment in the depleted group later to die of storm. The preoperative basal metabolic rate levels were almost identical in the two groups, but the pulse rate was still appreciably elevated preoperatively in those whose storms terminated fatally. The difference in the number of fatalities following hemithyroidectomy and subtotal thyroidectomy is not significant.

TABLE 9.—*Influence of Age and Serious Complicating Diseases on Survival*

	Number	Average Age	Number with Complicating Diseases
Survivors	12	45	5
Fatalities	24	49	19

We have little to add to the classic descriptions of the clinical appearance of patients in thyroid storm. The "activated" type of storm characterized by restlessness progressing to delirium, tachycardia, vomiting and diarrhea, dehydration, jaundice on occasion and a fever rapidly mounting to 106 F. or higher was the commonest variety in our series. Two of our patients presented the classic appearance of the "apathetic" storm characterized by extreme prostration with muscular hypotonia, mental apathy and a temperature rarely exceeding 101 F. It is not apparent from our data on what this profound difference in response to thyrotoxicosis depends.

Patients whose crises were initiated by acute pyogenic infection exhibited the leukocytosis and neutrophilia appropriate to the infection. Those whose storms were provoked by trauma, such as thyroidectomy, had a normal white blood cell count.

The fundamental pathologic physiology of thyroid crisis (or indeed, of hyperthyroidism) being unknown, a complete and rational therapeusis has not yet been devised. The first patient in our series was treated with antipyretics and hypnotics. Iodine has been employed in all subsequent cases together with a variety of adjuvants such as sedatives and oxygen. In the middle thirties the important role of the liver in thyrotoxicosis became appreciated, and intravenous dextrose was added to the therapeutic regimen. Vitamin preparations began to be administered in the late thirties. Our last 4 patients have been treated with both thiouracil and iodine. An initial dose of 0.6 Gm. of thiouracil was followed in one hour by 30 minims (2 cc.) of saturated solution of potassium iodide, and the two medicaments were continued simultaneously thereafter. Our last 3 patients have been treated with supplementary injections of adrenal cortical extract in doses adequate to combat an addisonian crisis. We have had no experience with spinal anesthesia as a mode of treatment. Since the gravity of thyroid storm precludes the performance of a controlled therapeutic experiment, we are unable to subject these data to critical evaluation.

Table 10.—*Precipitating Factors in the Development of Thyroid Storm*

Medical Storms		Surgical Storms	
Streptococcic pneumonia	1	Thyroidectomy	14
Digitalis intoxication	1	Lysis of adhesions	1
Iodine withdrawal	4	Postoperative hemorrhage and secondary suture	3
		Wound sepsis and mediastinitis	2
		Bronchopneumonia	6

REPORT OF CASES

The following case history of a patient who survived an apathetic storm is reported to illustrate the therapy employed in the most recent crisis which we treated.

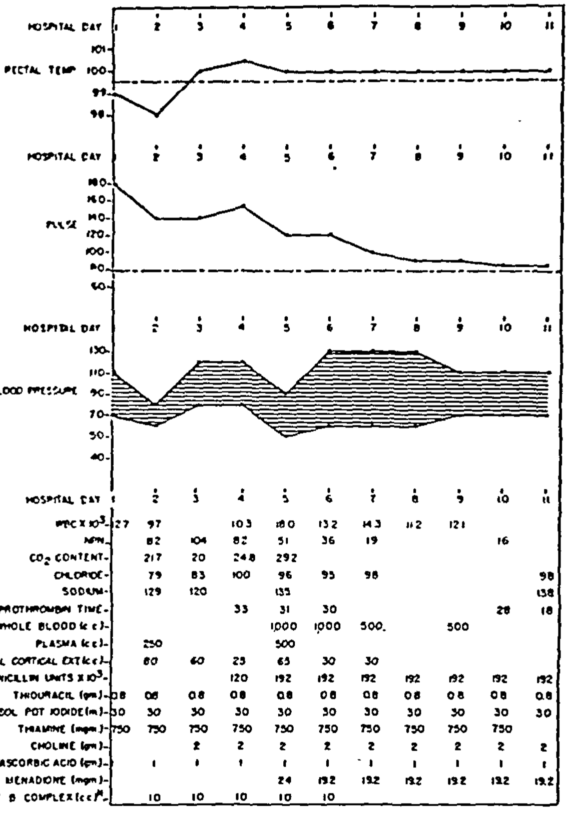
Case 1.—A woman aged 29 was admitted to the Massachusetts General Hospital on March 18, 1946, complaining of intractable vomiting and diarrhea of two weeks' duration. She had been having fifteen to twenty bowel movements each day and five to eight at night. She had vomited everything she had eaten. One week prior to admission there developed in the upper part of the abdomen pain which radiated around both costal margins.

She had been extremely nervous during her first pregnancy three years previously and for several months after delivery. The nervousness gradually subsided spontaneously but recurred two years prior to admission, together with fatigue and loss of 25 pounds (11 Kg.) despite a good appetite. She again recovered without treatment and regained her lost weight. One year prior to admission her friends began to comment on the increased prominence of her eyes. Once more she became fatigued and nervous and lost 15 pounds (6.8 Kg.). She experienced episodes of vomiting and diarrhea about once a month, of which the episode leading to hospital admission was the severest.

On admission the temperature was 100.4 F. per rectum, the pulse rate 120, the respiratory rate 24 and the blood pressure 130 systolic and 80 diastolic. There was moderate proptosis of the eyes with lid lag. The thyroid was diffusely enlarged to three times the normal size. The heart was not enlarged. A grade 3 systolic murmur was audible over the entire precordium. The pulmonary second sound was louder than the aortic second sound. There was diffuse tenderness in the epigastrium without spasm. The white blood cell count was 12,700 and the urinalysis revealed normal conditions. An electrocardiogram showed the tachycardia to be of sinus origin. A surgical consultant ruled out an acute condition in the abdomen requiring emergency surgical intervention, and a diagnosis of hyperthyroidism was made. She was given phenobarbital, codeine, acetylsalicylic acid and soluble pentobarbital. When the patient was seen several hours later by a thyroid consultant, she was no longer agitated but extremely apathetic and weak. Her color was gray, and she appeared to be in shock. There was a faint icterus of the scleras. The pulse rate had increased to 180, and the blood pressure had fallen to 100 systolic and 60 diastolic. She was placed in an oxygen tent and given thiouracil 0.4 Gm. immediately and 0.2 Gm. every six hours; 30 drops (2 cc.) of potassium iodide one hour after the first dose of thiouracil; 20 cc. of whole adrenal cortical extract intravenously and 5 cc. every hour intramuscularly. A 250 cc. transfusion of plasma, 600 cc. of a solution of 25 per cent dextrose in water with added vitamins and 750 cc. of isotonic solution of sodium chloride were given during the next twenty-four hours.

Table 11.—*Factors Influencing Survival from Thyroid Storm (Surgical)*

	Number	Average Age	Average Weight Loss, Lbs.	Serious Complicating Diseases	Average Admission B. M. R., %	Average Preoperative B. M. R., %	Aver. Weight Gained in Hospital, Lbs.	Average Pulse Rate Preoperatively	Hemithyroidectomy	Subtotal Thyroidectomy
Survivors	8	44	11	4	+40	+32	2½	80	3	5
Fatalities	16	47	30	12	+50	+36	2½	95	8	8



HOSPITAL DAY	1	2	3	4	5	6	7	8	9	10	11
WBC X 10^3	127	97		103	180	132	143	112	121		
NPN		82	104	82	51	36	19			16	
CO_2 CONTENT		217	20	248	292						
CHLORIDE		79	83	100	96	95	98				98
SODIUM		129	120		135						138
PROTHROMBIN TIME				33	31	30				28	18
WHOLE BLOOD (cc)					1000	1000	500.		500		
PLASMA (cc)		250			500						
ADRENAL CORTICAL EXT (cc)		80	60	25	65	30	30				
PENICILLIN UNITS X 10^3				120	192	192	192	192	192	192	192
THIOURACIL (gm)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
SAT SOL POT IODIDE (m)	30	30	30	30	30	30	30	30	30	30	30
THIAMINE (mgm)	750	750	750	750	750	750	750	750	750	750	
CHOLINE (gm)			2	2	2	2	2	2	2	2	2
ASCORBIC ACID (gm)		1	1	1	1	1	1	1	1	1	1
MENADIONE (mgm)					24	19.2	19.2	19.2	19.2	19.2	19.2
VIT B COMPLEX (cc)*		10	10	10	10	10					

Chart 1 (case 1).—Clinical course and treatment employed during apathetic thyroid storm. * Each 1 cc. of vitamin B complex contains: thiamine 20 mg., riboflavin 6 mg., calcium pantothenate 2 mg., pyridoxine 1 mg., nicotinamide 40 mg., choline 10 mg. and para-aminobenzoic acid 5 mg.

Forty-eight hours after admission the patient appeared stronger. Her urinary output, which had been virtually nil since entry, now began to increase. There was unmistakable scleral icterus. The blood pressure, which had fallen to 74 systolic and 50 diastolic, had risen to 110 systolic and 60 diastolic, and the pulse rate had slowed to 148 per minute. There were slightly impaired resonance and decreased breath sounds at the base of both lungs. She was thought to have early bronchopneumonia. The administration of penicillin in a dosage of 24,000 units every three hours was begun intramuscularly and continued for eight days.

Three days after admission the patient became restless, nauseated and slightly distended. She began to pass large amounts of fresh clotted blood rectally and continued to do so for the next twenty-four hours. The blood pressure fell to 100 systolic and 50 diastolic, and the pulse rate rose to 175. She was given two 250 cc. plasma transfusions and six 500 cc. whole blood transfusions during the next five days. Menadione was admin-thiouracil therapy was required to lower the basal metabolic rate from + 45 to + 8 per cent As the basal metabolic rate fell, the patient's course was further complicated by digitalis intoxication and a bronchitis due to Esch coli, which responded to intensive therapy with aerosol penicillin When she was finally operated on four months after entry, she weighed 90 pounds (40 8 Kg) A small multinodular goiter was removed under local anesthesia There was considerable fluctuation in the blood pressure during the operation, but the pulse remained stable No febrile reaction occurred postoperatively, and convalescence was smooth

Many of the articles in the literature of thyroid crisis leave one with the impression that storm is an essentially capricious phenomenon, likely to occur after relatively trivial surgical procedures in patients who exhibit minimal toxicity With this conception we profoundly disagree Storm warnings, often not heeded except in retrospect, were displayed by every one of our patients Thyroid crises occurred in patients with severe thyrotoxicosis who were nutritionally depleted, who suffered from serious complicating diseases and in whom therapy did not accomplish a notable amelioration of the thyrotoxicosis Now that effective medical measures are available, there is no excuse for operating on such patients (except for emergency procedures) until the thyrotoxicosis and its metabolic consequences have been completely neutralized

CONCLUSIONS

1 Thyrotoxic crisis ("thyroid storm") has occurred 36 times in 2,033 thyrotoxic patients admitted to the wards of the Massachusetts General Hospital in the past twenty-five years

2 Two thirds of the 36 patients died

3 Without exception, storms occurred in patients whose thyrotoxicity was great, as indicated by decided loss in weight and a high basal metabolic rate on admission Severe complicating diseases, especially heart disease, were common in thyrotoxic persons in whom a crisis developed These complications exerted a significant influence on the survival of such patients

4 The postmortem findings disclosed the frequent occurrence of cardiac and pulmonary pathologic conditions in patients who died of thyroid storm Surprisingly few patients had any demonstrable hepatic lesions

5 Precipitating factors identifiable as provocative of thyrotoxic crisis included thyroidectomy (14 cases), pneumonia (7), iodine withdrawal (4), postoperative hemorrhage and secondary suture (3), wound sepsis (2) and digitalis intoxication (1)

6 The likelihood of a patient's weathering a postoperative crisis could be predicted accurately in retrospect by his response to preoperative treatment Patients whose thyrotoxic symptoms were not ameliorated preoperatively and who failed to gain weight did not survive thyroid crises

7 The therapy of a patient in storm should be individualized to correct all the recognizable abnormalities stemming from the hypermetabolism, as illustrated by the report of a recent case to show the treatment currently being employed

8 The advent of thiouracil and related goitrogenic agents promises a significant reduction in the incidence of postoperative thyroid storm, once the necessity for continuing the administration of antithyroid drugs until the patient is rendered euthyroid has been grasped.

Clinical Notes, Suggestions and New Instruments

TRIPELENNAMINE "PYRIBENZAMINE" OINTMENT FOR THE RELIEF OF ITCHING

SAMUEL M FEINBERG, M D
and
THEODORE B BERNSTEIN, M D
Chicago

The palliative benefit produced by the oral administration of tripelennamine hydrochloride ("pyribenzamine hydrochloride" N N R) and other antihistaminic drugs on the symptoms of many allergic manifestations has now been fully demonstrated[1] In the dermatoses the effect of these drugs has been to reduce the edema of the lesions, but above all they have been effective in the relief of the pruritus There is some evidence that even pruritus not definitely ascribable to an allergic cause such as pruritus due to icterus or to diabetes, has been relieved by these drugs We have shown also[2] that the local application of a solution of the antihistaminic substance to a scratch on the skin inhibits the normal whealing from histamine or that from an antigen, such as ragweed, in an allergic person We further demonstrated that a solution such as tripelennamine hydrochloride would penetrate the skin when applied to the unbroken integument This was shown by applying the antihistaminic substance to an area of dermographic skin and then stroking this part and the contiguous untreated skin Dermographic whealing took place only at the untreated areas, skipping the treated site We had observed over several seasons a patient with hay fever due to ragweed whose only unrelieved complaint was a pronounced itching and dermatitis of the nasal vestibule and the upper lip During the 1945 season we applied cotton soaked with a solution of an antihistaminic drug to these areas Decided relief and healing of the dermatitis followed

The foregoing considerations led us to hope that topical applications of these drugs might be of value in itching dermatoses, particularly atopic dermatitis Our first preparations were aqueous solutions of the drug, later, mixtures containing vegetable gums were used We decided finally that ointments would allow more prolonged contact Our preliminary crude ointments made by mixing the tripelennamine hydrochloride crystals with the ointment base indicated to us that concentrations above 2 per cent would probably be too irritating, while those far below that strength would not be sufficiently effective The results to be described are based on the use of 2 per cent tripelennamine hydrochloride in both anhydrous and water soluble base

Topical application of 2 per cent tripelennamine hydrochloride in water soluble or anhydrous base ointments was tried in 33 cases of atopic dermatitis (flexural eczema) These patients suffered from varying grades of chronic lichenifying forms of the disease to exceedingly acute states, and the lesions varied from those confined to the antecubital fossae to those of generalized eczema Most of the cases were severe Either prior to the local treatment or subsequently all patients were

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From the Division of Allergy, Department of Medicine Northwestern University Medical School

The ointments were prepared by Ciba Pharmaceutical Products, Inc

[1] Feinberg S M Allergy in Practice ed 2, Chicago The Year Book Publishers, Inc , 1946 Histamine and Antihistaminic Agents Their Experimental and Therapeutic Status Report to the Council on Pharmacy and Chemistry, J A M A **132** 702 (Nov 23) 1946 Levin, S L B Dimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl) Its Use in Allergic Diseases, J Allergy **17** 145, 1946 Arbesman, C E , Koepf, G F , and Miller G E Some Antianaphylactic and Antihistaminic Properties of N'Pyridil N Benzyldimethylethylenediamine Monohydrochloride (Pyribenzamine), ibid **17** 203, 1946

[2] Friedlaender, S , and Feinberg, S M Histamine Antagonists III The Effect of Oral and Local Use of B Dimethylaminoethyl Benzhydryl Ether Hydrochloride on the Whealing Due to Histamine, Antigen Antibody Reactions, and Other Whealing Mechanisms, Therapeutic Results in Allergic Manifestations, J Allergy **17**: 129, 1946

studied and observed for allergic factors: the majority disclosed definite cutaneous reactions and observations which indicated relationship between the eczema and specific allergenic causes. Thirteen of the patients were adults, while only 10 were under 10 years of age. The patient was instructed to apply the ointment as often as needed. Twenty-four of these patients reported consistent relief from the use of the ointment. In some instances the continued antipruritic action and the cessation of scratching produced improvement in the inflammation. In some patients who were relieved the results were additive to the benefit obtained by the use of this or other antihistiminic drugs orally: in other words, more complete freedom from itching was obtained by the simultaneous use of internal and local application of the drug. There were a few instances in which the oral or local treatment was the only one effective. The topical application was found to be particularly desirable in patients whose lesions were localized to small areas On a number of occasions while the patient was in the office we were able to demonstrate a striking result in a few minutes by applying the ointment in one area (one arm, for example) and having the patient compare it with other sites. A number of patients volunteered the information that this ointment gave them relief exceeding that obtained from any other topical applications, including local anesthetics. Occasionally the ointment was irritating, particularly when there was acute inflammation. A stinging sensation occurring for a few moments after the application of this medicament is no contraindication to its use.

We also had the opportunity to apply this topical medicament to 9 patients with pruritus ani. Three of these patients had been subjected to allergic studies by us because of a complaint of vasomotor rhinitis. It cannot be said at this time, however, that their anal pruritus was due to allergy The other patients were not studied by us: they were friends of the previous 3 patients and were anxious to try the ointment because of the good results obtained by the others. Eight patients had symptomatic relief, in most of them exceeding the benefit obtained from anything they had used previously over a period of years. In 1 patient, whom we had an opportunity to observe periodically, there was a noticeable diminution in the acuteness of the inflammation.

We also had occasion to note the effect of this medicament on several other types of dermatitis. In 2 cases of contact dermatitis of the eyelids, in 2 of dermatitis of the arms of unknown nature and in 1 case of dermatitis of the legs of unknown cause, improvement in the itching was obtained. In a patient with urticaria the pruritus caused by the individual lesion was relieved by the application of the ointment to the lesion. In 4 other cases of dermatitis no benefit was evident.

The choice of the water soluble base or the anhydrous base would depend somewhat on the individual circumstances. In most instances the water soluble base might be preferable because it appears to be quicker and perhaps more pronounced in activity. The anhydrous base, however, might be preferred when a greasy covering is desired. It should be remembered that this type of treatment does not supplant other internal therapy or allergic management. The allergic approach is of basic importance, particularly in the older age group of atopic dermatitis. Nor does the tripelennamine ointment take the place of other local therapy, such as lotions of solution of aluminum acetate or tar or naphthalan applications. This is a special therapy, which is aimed at relief of the itching and secondarily at inhibition of some of the detrimental effects of the histamine-like substance released in the skin as a result of the allergic reaction. Our preliminary trials indicate that some of the other antihistaminic agents could be used topically in a similar manner.

SUMMARY

Tripelennamine ("pyribenzamine") hydrochloride in a 2 per cent concentration in ointment form applied locally has been found to give relief to the majority of patients with itching dermatoses, particularly atopic dermatitis and pruritus ani.

185 North Wabash Avenue.

Council on Physical Medicine

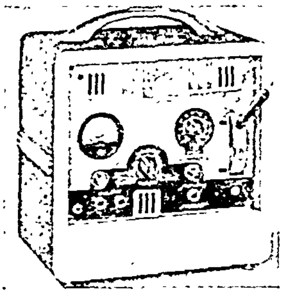
The Council on Physical Medicine has authorized publication of the following report. Howard A. Carter, *Secretary.*

BURDICK MUSCLE STIMULATOR ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

Two currents are provided by the Burdick Muscle Stimulator for therapeutic use. One is designated "galvanic" and the other "stimulator." The galvanic current was tested for percentage of ripple and was found to be almost ripple free—the ripple was too small to be measured. This current is suitable for ion transfer, electrolysis and the stimulation of muscle—denervated and normal—by using an interrupter key to open and close alternately the current circuit.

The current designated "stimulator" is a condenser discharge of small capacity controlled by an interrupter. *It is not a faradic current.* The current is surged by means of a geared mechanism to which a handle is attached for use by the operator. This mechanism is easily controlled and permits the operator to determine manually the rate of muscle contraction as well as the degree. It performs a function similar to the manual manipulation of the "Morton Smart" machine for securing the graduated muscular contractions. This current can be used for stimulation of the muscle having an intact nerve supply. It cannot be used to secure contraction of the partially or totally denervated muscle. Therefore its use is confined solely to treatment of the muscle with an intact nerve supply.



Burdick Muscle Stimulator.

The unit is small, portable, compact and well constructed. The cabinet is of metal and measures 20.3 by 30.5 by 30.5 cm. The unit weighs 12.25 Kg. It is equipped with the usual standard accessories, which are placed in a special compartment at the base of the cabinet. The dispersive pad, 12.7 by 10.2 cm., supplied with the unit tested on patients, was found to limit the current intensity to a maximum of 35 milliamperes without danger of an electrical burn. The unit has a minimum but an adequate number of controls and meters. The ammeter is calibrated from zero to 12 milliamperes for precision readings and from zero to 60 milliamperes for maximum output.

The Council on Physical Medicine voted to include the Burdick Muscle Stimulator in its list of accepted devices.

PLICOSE-WATASEAL PILLOW AND MATTRESS COVERS ACCEPTABLE

Manufacturer: Fine Art Apron Co., Inc., 50 West 29th Street, New York 1.

These pillow and mattress covers are designed to alleviate the distress caused by symptoms of asthma and allergic disturbances due to feather and bedding dust. The pillow and mattress covers are made of a plastic composition known as vinyl film, which is resistant to alcohol, mineral oils, ammonia, iodine and soap. Samples were examined in a clinic acceptable to the Council on Physical Medicine, and the claims for resistance to the several aforementioned agents were verified. The "Plicose-Wataseal" nonallergenic pillow covers were found to be satisfactory for the purpose for which they are intended.

The Council on Physical Medicine voted to accept the "Plicose-Wataseal Pillow and Mattress Covers" for inclusion in its list of accepted devices.

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SATURDAY, JULY 5, 1947

BRUCELLOSIS

The erroneous concept still is prevalent that brucellosis is a regressive, rare and self-limited disease. Infection of nonimmune persons must be expected to continue as long as infected food is ingested or there is contact with infected cattle, goats, swine, sheep or horses. Some idea of the importance of the existing problem can be gained from statistics compiled for the state of Iowa, where 638 cases were reported in 1946.[1] Histories obtained in 96 per cent of the cases showed direct contact of the patient with hogs and cows before the recognized onset of the illness in 74 per cent. The remaining 26 per cent were assumed to have contracted the disease through ingestion of unpasteurized dairy products.

The total number of cases reported in the United States has averaged about 4,000 yearly for the past several years. Only the relatively severe acute illnesses are diagnosed and reported. Chronic infections outnumber the acute illness by a ratio of at least 10 to 1 but these chronic infections are rarely diagnosed. If 4,000 cases are reported yearly it is probable that from 40,000 to 100,000 infections occur yearly. If only 40,000 cases occur annually, 400,000 cases will have occurred in a ten year period, with an unknown percentage of this total accumulating from year to year as persistent or recurrent illness.

Although the mortality is usually low, higher rates may occur, especially in the presence of epidemics of the more virulent suis infection carried by raw milk. Cross infection apparently is increasing, allowing the hog or the cow to transmit the virulent melitensis or suis strain to man. In what degree the less severe infections may contribute to death indirectly is unknown.

The annual food loss in milk, butter, beef, veal and pork reaches a staggering total in calories of the kind most needed by an underfed world. The incidence of infection in cattle is still high. Huddleson[2] made estimates for the state of Michigan based on the pooled results of investigations of others. The average infected cow was found to produce about 2,065 pounds less milk per lactation period than the noninfected cow. Estimating that 10 per cent of 1,080,000 cows in the state of Michigan were infected, he considered that the 108,000 infected cows resulted in a total milk loss of 222,904,000 pounds of market milk yearly—enough to supply about 557,000 persons for one year. The loss in butter was translated into about 11,140,200 pounds per year—enough to supply 655,300 persons for a year. Because of abortion or sterility due to Brucella infection a loss of about 16,240 calves per year was estimated, representing a loss of 1,299,200 pounds of veal or of 6,494,000 pounds of beef or a proportionate annual loss in dairy products if calves were raised as milk-producing animals. The true incidence of hog infection is not known, the blood agglutination reaction being even less reliable in hogs than in cattle. It is thought to be relatively high, however. On one hog farm 82 per cent of the expected pig crop, or 54,180 pounds of dressed pork, was lost through infection.

Failure of recognition in a large percentage of chronic cases of brucellosis is to be expected except with the most careful study. The concept has not yet attained general acceptance that brucellosis is no less protean than tuberculosis or syphilis, that it may simulate many other conditions, including psychoneuroses and that it may coexist with any of them. There are no pathognomonic signs and no single uniformly reliable diagnostic procedure. The blood agglutination with Brucella is frequently negative in the acute illness and usually negative in the chronic illness: it has significance only if positive. It is still used as the one single criterion of diagnosis by a majority of practitioners, although positive cultures repeatedly have been demonstrated in the absence of blood agglutinins. The employment of all available laboratory procedures, in addition to the exhaustive clinical study—complete blood counts, sedimentation rates, immune reactions, intradermal tests and culture—may be essential to diagnosis.[3] Rarely is it justifiable to draw conclusions from the intracutaneous reaction alone.

A defeatist attitude toward treatment, not justified by results reported by various methods, also prevails. Development of still better methods in diagnosis, treatment and prevention, in animals and man, depends upon an increasing "brucellosis-mindedness" and continued investigation. The disease continues to be a major public health problem. Pasteurization of all dairy products must remain the greatest bulwark against human infection until methods of control can be perfected.

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[1] Brucellosis in Iowa, Iowa news, J. A. M. A. **134:** 197 (May 10) 1947.

[2] Huddleson, I. F.: The Relation of Brucellosis to Human Welfare, New York Acad. Sc. **48:** 415, 1947.

[3] Harris, H. J.: Brucellosis: Advances in Diagnosis and Treatment, J. A. M. A. **131:** 1485 (Aug. 31) 1946.

ENRICHMENT OF CORN PRODUCTS

Consideration of the enrichment of corn products now comes as a logical corollary to the enrichment of white bread and flour launched in May 1941. Corn is a staple human food in the South; in some rural areas it substantially replaces white flour products. Moreover there is a long recognized association of pellagra with diets in which corn predominates. This was attributed for several years entirely to the low niacin content of corn; now it is known that corn also is low in tryptophan, which has come to be recognized as a precursor of niacin. Although milk is low in niacin, its tryptophan content reasonably accounts for the antipellagric effect emphasized by Goldberger. According to Woolley, corn also contains an antiniacin component.

The general adoption of enrichment of corn products has been long delayed principally by the peculiar organization of the industry. National organizations of wheat millers and of bakers warmly welcomed the inauguration of enrichment and did much to promote its general adoption. The corn milling industry, however, is divided into two main branches as far as human consumption of corn is concerned. One branch produces degerminated corn products, largely in the corn belt of the Middle West. Many of these mills are of good size and use well developed and somewhat intricate technologic processes whereby the germ is separately utilized for oil production. Most of the grits and a fair fraction of the corn meal used in the South are of the degerminated variety. The other branch comprises thousands of mills, mostly small, throughout the South which grind the whole grain and market it without separation of the germ. Retention of the germ conserves some of the nutrients, notably thiamine, but niacin is still significantly low. Accordingly each class of product requires quantitatively different additions to attain appropriate and uniform enrichment levels.

The division in the industry has been further aggravated by the adoption of laws in several Southern states which require enrichment of degerminated products but not of whole corn products. This has been justified on the ground that the former is nutritionally more deficient. However, the local whole corn millers are competitive with the Midwestern millers, and they present a difficult enforcement problem because of their numbers and their isolation.

A serious attempt to educate the small miller to enrich his product voluntarily has been under way in South Carolina for three years. Working from Clemson College as a base, Dr. E. J. Lease and his associates have devised an automatic feeder adapted to supply a tiny stream of an enrichment mixture to the corn as it enters a small mill. These feeders have been manufactured by the hundreds. At the same time an enrichment mixture suitable for whole corn products is produced and distributed from Clemson. By this means and with the aid of an agent of the Agricultural Extension Service, about one fourth of South Carolina's 850 millers have been enlisted in the regular enrichment of their product. This project has been aided by substantial grants from the Williams-Waterman Fund for the Combat of Dietary Diseases. Now the effort is being extended into several adjoining Southern states.

Enrichment of corn products will be facilitated by the recent issuance under the Federal Food, Drug and Cosmetic Act of uniform standards of nutrient content for enriched products of corn meal, degerminated corn meal and corn grits. These standards conform substantially to those for enriched white flour. Corn grits present a special problem in that they are customarily rinsed before cooking. However, the nutrients added can be fixed on the particles; means for doing this are now available.

A public awakening to the importance of this campaign is essential for its success. The physician in each community can render a valuable public service by giving the program his support. The general adoption of enrichment of corn products can be expected to eradicate forthright pellagra.

Current Comment

SOME UNUSUAL CASES OF SMALLPOX

The transmission of smallpox usually occurs following direct or indirect contact with a preexisting case. However, cases may develop from unusual sources of infection. Recent experiments by British scientists[1] offer an explanation of some of the unusual methods of transmission of smallpox. In an outbreak in the spring of 1946 in England Downie and Dumbell procured from patients crusts and exudates which they kept under ordinary atmospheric conditions at room temperature. They had also for their experiments crusts from a case in the Middlesex outbreak of 1944 and from 2 cases which occurred in 1945. At intervals a number of crusts were removed from the container, then thoroughly broken up, and sterile buffered distilled water was added. This suspension was left to extract at room temperature for two hours and then overnight in the refrigerator. Next day the suspension was centrifuged, and the supernatant fluid was mixed with penicillin solution to suppress bacterial contaminants before inoculation into fertile hen's eggs. When infection with smallpox virus occurred, characteristic lesions appeared on the chorioallantois in the developing eggs. Experiments were conducted also with smallpox vesicle fluid which had been smeared on glass slides and sent to the laboratory for microscopic examination. In an experiment in which the vesicle fluid was dried in this way the specimen had been taken from a skin lesion in a patient with hemorrhagic smallpox on the seventh day of the disease, one day before the patient died. Virus was found to survive in the diluted vesicle fluid dried on glass slides for thirty-five days when exposed to daylight and for eighty-four days when kept in the dark at room temperature. Smallpox virus was thus recovered from different samples of crusts from patients and kept at room temperature for several months, and from one specimen kept for more than a year. In crusts and dried vesicle fluid kept at room temperature the amount of virus recoverable diminished at first fairly rapidly, but virus was detected many months after this initial period. Virus did not survive as long in the diluted vesicle fluid which had been dried on glass slides as in crusts. There was little relation between the virus content of crusts and the stage of the disease at which they were collected. By the same technic, virus had been isolated from sweepings from the ward floor near a bed in which a child was convalescing from smallpox. These experiments confirm that the material from the skin lesions in smallpox patients is infective. Such material has been responsible for smallpox cases, and smallpox has developed among laundry workers to whom infective material was conveyed on bedclothes. These experiments explain also certain cases in which smallpox has occurred in houses in England to which gifts had been brought from the East. Obviously, therefore, the various articles used by a smallpox patient may long remain capable of transmitting the disease. The skin lesions cannot be regarded as the only source of virus, as patients may spread the infection before their skin lesions develop. A number of people are known [2] to have contracted smallpox after attending the funeral of a patient who died from an unrecognized hemorrhagic attack. The patient's body remains infected for a time after death. Although these uncommon examples are important sources of infection, they should never be allowed to cause the usual human sources of smallpox to be overlooked.

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[1] Downie, A. W., and Dumbell, K. R.: Survival of Variola Virus in Dried Exudate and Crusts from Smallpox Patients, Lancet 1: 550 (April 26) 1947.

FIBROIDS IN PREGNANCY

Fibroids are sufficiently common during pregnancy to constitute an important complication. Reports of their incidence vary; Buckell,[1] in a review of 122 cases, found an incidence of 0.79 per cent. The average age of Buckell's London group was 34.3 years. More than one fifth of the patients were primigravidas aged 36 or older. Only 79 of the 113 patients who were hospitalized had healthy children. Abortions occurred in 14 per cent and fetal and neonatal deaths in 11.1 per cent. In 57 per cent labor was uncomplicated; cesarean section was performed in 25 per cent of the cases, extraction by forceps in 12.5 per cent and craniotomy once. Uterine inertia was more frequent than in unselected cases but less common than might have been expected. Three of the patients died. One died from postoperative shock following cesarean section, 1 from terminal bronchopneumonia complicated by sloughing fibroids and vesicovaginal fistula after craniotomy and 1 from paralytic ileus three days after myomectomy and cesarean section. Eighty children left the hospital in good health, including one set of twins. Five children were born macerated, 1 was born dead, 2 stillbirths occurred where the cord was pulsating but respiration did not develop and there were 2 neonatal deaths, 1 following premature labor and the other a forceps delivery. Buckell concludes that the presence of fibroids is a serious complication to pregnancy, labor and the puerperium, as it is followed by a high maternal death rate and fetal mortality. Myomectomy during pregnancy, he believes, should be avoided if possible and "red degeneration" should be treated conservatively. A living child can usually be obtained by cesarean section, and this procedure should be seriously considered in all elderly primigravidas and other patients in whom there are additional complications.

EXPERIMENTS ON IMMUNITY TO POLIOMYELITIS

Yale University scientists,[1] members of the Yale Poliomyelitis Study Unit organized in 1931, report results of their immunity studies which provide a better understanding of the mechanics of resistance to infantile paralysis. Eight chimpanzees were given food containing poliomyelitis virus or inoculated with the virus into and under the skin. The animals did not show signs of illness, although almost immediately they began to excrete the virus in their stools; they continued to eliminate virus for as long as five weeks in some instances. Blood tests carried out before the virus was administered, and again after the virus had disappeared from the stools, revealed that specific antibodies capable of neutralizing live poliomyelitis virus had made their appearance in the blood. In some of the animals these antibodies remained present for as long as a year. Some months after Melnick and Horstmann had produced the "intestinal carrier state" the animals were again fed the same strain of poliomyelitis virus or had it injected into and under their skins. The animals now remained resistant to the second attempt at producing an intestinal carrier state. Only when the chimpanzees were given a strain of virus different from the one used to produce the original intestinal carrier state did they again excrete virus in their stools. The results of these studies indicate a relationship between this type of poliomyelitis infection and the presence of specific antibodies in the animals' blood. It may be, the Yale scientists stated, that in these experiments the chimpanzees responded in somewhat the same fashion as do many human beings: they develop a virus intestinal carrier state without signs of acute illness and produce specific antibodies in the blood as the result of this minimal type of infection.

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[2] Lancet 1:562 (April 26) 1947.

[1] Buckell, E. W. C.: *Fibroids in Pregnancy*, J. Obst. & Gynec. 54:70 (Feb.) 1947.

[1] Melnick, J. L., and Horstmann, Dorothy M.: Active Immunity to Poliomyelitis in Chimpanzees Following Subclinical Infection, J. Exper. Med. 85:287 (March) 1947.

ORGANIZATION SECTION

PROCEEDINGS of the ATLANTIC CITY SESSION

MINUTES OF THE ANNUAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, HELD IN ATLANTIC CITY, JUNE 9-13, 1947

(Concluded from page 806)

HOUSE OF DELEGATES

Fourth Meeting—Thursday Morning, June 12

Roll Call

On motion of Dr. H. B. Everett, Tennessee, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the registration slips constituted the roll call.

Presentation of Minutes

It was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, that the House dispense with the reading of the minutes.

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, reported that 173 delegates had registered.

Report of Reference Committee on Sections and Section Work

Dr. Roy B. Henline, Chairman, presented the following report:

1. Your committee has considered the report of the Council on Scientific Assembly and wishes to express great commendation for the work of this Council. With an unusual amount of effort and with great devotion to their task, they have produced an outstanding scientific program undoubtedly unsurpassed in the history of medical organizations. Your reference committee recommends the adoption of the report of the Council on Scientific Assembly.

2. Resolutions on Sections Celebrating Their Centennials: Your committee received resolutions introduced by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, the intent of which is to urge the various scientific sections to commemorate their various anniversaries, to give more attention to their social functions and to encourage good fellowship among their individual members. Your reference committee commends this intention and recommends that all sections of the American Medical Association be urged to use every occasion for the promotion of fellowship and for pride in the accomplishment of the particular branch of medicine represented, and further recommends that the Secretary of the American Medical Association send to the secretary of each of the scientific sections a copy of this recommendation.

3. Resolution on Establishment of Section on Diseases of the Chest: Your committee received a resolution introduced by Dr. Walter E. Vest, West Virginia, regarding the establishment of a Section on Diseases of the Chest. The resolution points out that there are about 2,500 physicians engaged in the practice of this specialty; that an enormous amount of progress has been made; that the subject is of enormous import to the American people, and that the general welfare would be served by the establishment of such a section. After hearing from eight Fellows of the Association, who appeared before it, your reference committee is of the opinion that it is advisable to establish such a section, and to that end the committee recommends that section 3 of article 5 of the Constitution be amended by deletion of the figures "175" and the substitution therefor of the figures "176"; and that the By-Laws be amended by adding to section 1 of chapter 15 a newly numbered section, as follows: "No. 19. Section on Diseases of the Chest." The committee further recommends that in the interim the Council on Scientific Assembly allot a portion of the program of the Section on Miscellaneous Topics at the next annual session to the subject of diseases of the chest, and that at that time a section be organized to be known as the Section on Diseases of the Chest.

Respectfully submitted,
Roy B. Henline, Chairman. Lowell S. Goin.
Edgar V. Allen. Scott Lord Smith.
Burt R. Shurly.

The first two sections of the report of the reference committee were adopted on motions of Dr. Henline, duly seconded and carried.

Dr. Henline moved adoption of the third section of the report of the reference committee dealing with the Resolution on Establishment of Section on Diseases of the Chest, and the motion was seconded by Dr. Thomas S. Cullen, Maryland. After discussion and suggestions of amendments, it was moved by Dr. E. Vincent Askey, California, seconded by Dr. Walter E. Vest, West Virginia, and carried, that the House approve a Section on Diseases of the Chest as a section of the Association.

Dr. Askey then moved that this be referred to the Committee to Study Revision of the Constitution and By-Laws so that that committee may take appropriate steps to see that the new section has the proper representation in the House of Delegates, and the motion was seconded by several and carried.

On motion of Dr. Henline, seconded by several and carried, the report of the reference committee as amended was adopted as a whole.

Introduction of Invited Foreign Guest

Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals, presented Professor C. Heymans of the University of Ghent, Belgium, who addressed the House as follows:

I just would like to say how glad I am to have this opportunity to join this splendid meeting of the American Medical Association and I consider it as a very great honor indeed. I am also very glad to have this opportunity to express very sincerely my appreciation and very deep appreciation for the splendid achievements made in medical science by different American schools and departments in the different universities and by this American Medical Association. I thank you very sincerely.

Report of Reference Committee on Medical Education

Dr. George W. Kosmak, Chairman, presented the following report, which was adopted on motion of Dr. Kosmak, seconded by Dr. James R. Reuling, New York, and carried:

Resolution on Nursing Shortage: Your reference committee listened to several individuals appearing before the committee to discuss the recommendations incorporated into this resolution. It is impressed with the necessity of considering seriously the question of stimulating the training of nursing personnel in some category of nursing service requiring less time and training while still preserving a reasonably good quality of training to insure satisfactory hospital care. Your reference committee believes that the entire problem of supply and training of nurses requires immediate study. It concurs with the recommendations of this resolution requesting the Board of Trustees to take appropriate action In recommending the adoption of this resolution with a single change in wording, namely that the term "approved hospital" be changed to read "hospital registered by the American Medical Association," your reference committee wishes also to call to the attention of this House that there was adopted yesterday the following recommendation from the Reference Committee on Reports of Officers:

"Your committee recognizes this serious situation It feels that in recent years too much stress has been laid on the technical and scientific preparation for the prospective student nurse rather than on her sympathetic understanding of the problem of patient handling, comfort and ordinary technics of treatment. It recommends that the President appoint a committee of five to be known as the Committee on Nursing Problems This committee shall investigate the present objectives of the nursing profession, the standards of education, the time involved for training, the various curriculums, the supply of nurses and quality of services rendered, remuneration, participation in the determination of administrative policies and the question of security benefits, and to study the training of practical nurses" In recommending the adoption of the resolution under consideration, your committee feels that the House will be acting consistently with the action taken on the recommendation just quoted Your committee recommends adoption of this resolution on the training of nurses and of some category of practical or certified nurse with the amendment quoted.

Respectfully submitted,

George W. Kosmak,
Chairman.
Joseph D. McCarthy.
Thomas S. Cullen.
William D Stovall.
A. W. Adson.

Report of Reference Committee on Legislation and Public Relations

Dr. Thomas P. Murdock, Chairman, presented the following report, which on motions of Dr. Murdock, duly seconded and carried, was adopted section by section and as a whole:

1. Resolutions on Health of the Nation· Your reference committee carefully reviewed these resolutions presented by Dr. T. D Cunningham, Colorado, and recommends their disapproval.

2. Resolutions on Effective Program of Public Relations and Resolution on Establishment of Committee on Public Relations: Your reference committee has reconsidered these resolutions and recommends substitute resolutions, as follows:

Whereas, The House of Delegates has authorized and endorsed an effective program of public relations for the American medical profession, and

Whereas, The American Medical Association is the only organization which is qualified to speak with authority for American medicine, and

Whereas, A major vacancy exists in the recently established public relations organization at the headquarters office; therefore be it

Resolved, That the Board of Trustees set up whatever machinery may be necessary to reestablish this bureau, and be it further

Resolved, That the Executive Committee of the Board of Trustees be in charge of public relations until the bureau is reestablished

3. Resolutions on Support of the SOS Collection of the Joint Distribution Committee. Your reference committee has reviewed the resolutions relative to the SOS (Supplies for Overseas Survivors) and recommends that the resolutions be disapproved for lack of sufficient information.

4 Resolutions on S. 140: Your reference committee has reconsidered the resolutions on the Taft-Fulbright bill and presents the following substitute resolutions:

Whereas, Senate Bill 140, sponsored by Senators Taft and Fulbright, creating a Department of Health, Education and Security has been favorably reported by the Senate Committee on Expenditures in the Executive Department, and

Whereas, The American Medical Association has repeatedly advocated a National Department of Health with a Secretary of Cabinet rank; be it therefore

Resolved, That the House of Delegates go on record as opposing that portion or portions of the bill tying in education and security with health; and be it further

Resolved, That if it is impracticable at the present time to establish an independent Executive Department of Health, the House of Delegates prefers the establishment of a National Health Agency such as proposed in S 545 (also sponsored by Senator Taft and other colleagues) than an Executive Department in which health, education and security activities would be combined

Respectfully submitted,

Thomas P. Murdock,
Chairman.
Thomas A. McGoldrick.
William M Skipp.
Lloyd Noland.
Forrest J. Pinkerton.

Report of Reference Committee on Hygiene and Public Health

Dr Walter E. Vest, Chairman, presented the following report, which was adopted on motion of Dr Vest, seconded by Dr Thomas M. D'Angelo, New York, and carried:

Resolution on National Health Policy· Your Reference Committee on Hygiene and Public Health has reconsidered this resolution, which is apparently the plan now operating in Monmouth County, N. J., for the medical care of the indigent. It embodies ten principles which the New Jersey delegation has found of value in meeting their problems. After study, your committee has revised this resolution to read as follows:

Whereas, The American Medical Association recognizes the need of supplying the professional and administrative leadership at the local level necessary to furnish public health services and adequate medical care to the people of the nation therefore be it

Resolved, That the following principles be promulgated under the leadership of the Board of Trustees or appropriate Council as guide posts to local societies in developing plans for care of the indigent:

1 Each component society will appoint the necessary committees to study the public health and medical care problems concerned and to supervise projects relevant to these problems

2 Each component society pledges itself to maintain a high standard of professional skills among the medical personnel assigned to these projects and to supervise such activities with a view toward maintaining high scientific standards and preventing personal exploitation

3 Each component society invites and welcomes at its discretion the active participation in its scientific programs by the qualified medical personnel of the appropriate health and welfare agencies, and, under suitable circumstances, of the desirable nonmedical personnel as well.

4 The health and welfare agencies will render genuine cooperation with each component society in the implementation of these projects

5 The health and welfare agencies will select their part time medical personnel from lists furnished by, or with the approval of, each component society

6 The health and welfare agencies will clear through each component society any grievances concerning medical personnel

7. The health and welfare agencies will protect the private practitioner and family doctor by discouraging treatment in preventive clinics and by returning to the family doctor any cases not economically suitable for examination or care at the health or welfare agency.

8 The health and welfare agencies will not profit financially by the labors of any medical personnel working there.

9 Each component society and the health and welfare agencies will seek the cooperation of dental, nursing and pharmaceutical organizations in a program fashioned to accord with these principles

10 Each component society and the health and welfare agencies will maintain continuing liaison with one another to implement these principles.

Your committee believes these principles may be of value to the Committee on Rural Medical Service in developing the activities of the rural health councils and may aid in other areas in the evolution of plans for the care of the medically indigent. It therefore recommends that the revised resolution be adopted.

Respectfully submitted,

Walter E. Vest,
Chairman.
James P. Wall.
Walter P. Anderton.
Leonce J. Kosminsky.
James A. Crabtree.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. Elmer Hess, Chairman, presented a report, which was adopted section by section and as a whole as amended. The report as amended reads:

BOARD OF TRUSTEES

1. Resignation of President-Elect: Your reference Committee notes with regret that Dr. Olin West, because of ill health, was obliged to resign as President-Elect. It wishes to commend the wisdom of the House of Delegates in the selection of a strong Vice President. The committee feels that the office of Vice President is an extremely important one and that no one should ever be selected for this position unless he has every qualification for the presidency.

2. Income and Expenditures: In 1946 the net income of the Association was $106,368.35 as compared to $990,708.81 in 1945. However, the committee realizes that this is due to the necessarily increased expenses of all the departments without an increase in the dues for fellowship This is a very good showing and it must be remembered that the American Medical Association is run for service and not for profit.

3. THE JOURNAL: Your committee has nothing but the highest compliments for THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, truly the greatest medical journal in the world, containing as it does scientific and informative news of vital interest to all medical men. The committee is happy to see the increase in the regular correspondence that THE JOURNAL has with many countries around the globe and it is particularly pleased to know that we now have a regular correspondent at Washington. Your committee notes with regret that THE JOURNAL is obliged, because of lack of paper and other facilities, to reject approximately 80 per cent of the scientific manuscripts that are submitted for publication. It hopes that this condition may be soon corrected. It compliments THE JOURNAL for its continued campaign against nostrums, charlatans, cultists and inferior institutions of education. It is happy to note the very pronounced increase in circulation.

4. Field Service: Under the able editorial leadership of Dr. Morris Fishbein, THE JOURNAL has shown definite progressive improvement, but your committee regrets that the associate editors are not used more often in the field service of the editorial staff. It believes that it is essential to the future welfare of THE JOURNAL and the American Medical Association that capable men, even though unable to speak with the fluency and authoritativeness of the Editor, should at least be trained so that they might approach him in effectiveness. After all, the associate editorship should be the proving ground for the individual who must some day, by necessity, take his place.

5. Special Journals: Your committee has reviewed with satisfaction the increase in the circulation and the number of pages of the special journals which are sponsored by the Association.

6. Hygeia: The admission of the fact that the printing of Hygeia must be transferred from headquarters to an outside company increases our necessity for enlarging the facilities and planning and completing our building program in the very near future. It is hoped that planning for the so-called "temple of medicine" might start immediately and that provision might be made for the rapid growth of the whole Association.

Your reference committee is pleased with the increased circulation of HYGEIA which was obtained from selected fields including physicians, dentists, schools, libraries, nurses and other health teaching groups. In the educational field the high school group study plan was initiated whereby HYGEIA is furnished as an auxiliary text for classroom use at a special rate of 15 cents a copy on school orders for ten or more copies. In a recent survey covering these groups, it was found that each copy of HYGEIA is read by an average of four students and that the magazine is used in classes on public health, physical education, biology, personal hygiene, first aid, physiology and science. Your committee wishes to compliment the 1931 House of Delegates which urged the Woman's Auxiliary of the Association to organize and make one of its chief activities the promotion of the distribution of this journal to parent teacher associations, boards of education, schools and colleges and other groups interested in health education. Out of 600 organized county units of the Auxiliary 90 per cent of the orders came from 25 per cent of the county auxiliaries. Twenty-five per cent showed interest but 50 per cent took no part in this work. An attempt should be made to reactivate all of these inactive units in the promotion of HYGEIA. It is noted that, in 1923, 14,175 subscribers were physicians, while in 1946 only 17,000 were physicians. It is suggested that there are more important places for HYGEIA than in the doctor's waiting room. But we should suggest that physicians be encouraged to subscribe and place HYGEIA in locations where its public relations value would be greater than collecting dust on a waiting room table.

7. American Medical Directory: Your reference committee can well understand why the American Medical Directory has not been issued since 1942. Every effort should be made to have a new issue published as soon as possible when adequate personnel and paper supplies are obtainable.

8. Book Publications: Your reference committee has noted that more and more of the books that were formerly published by the American Medical Association are being transferred to private medical publishers. As this is a comparatively new venture, it should be watched closely. If this procedure succeeds from all angles, it should be continued.

Library: Your reference committee commends the continuation of the library service even though there was a shortage of personnel. Many physicians are not aware of the value of the library, and its use should be encouraged.

QUARTERLY CUMULATIVE INDEX MEDICUS: Your reference committee notes the increased usage of the QUARTERLY CUMULATIVE INDEX MEDICUS and notes with satisfaction that this service is greatly appreciated by the membership.

Order and Mailing Departments: Your reference committee wishes to call attention to the enormous amount of mail handled by this department.

Employment Department: Your reference committee notes with satisfaction the good work being done in this department and urges that it be continued along present lines.

Cooperative Medical Advertising Bureau: Your reference committee congratulates the Bureau on its long years of existence and proved value. Since its reorganization in 1945, this department has continued with greater success.

10. Bureau of Health Education: Your reference committee reviews with pride the unusual accomplishment in the entire field of health education by the Bureau of Health Education. The appointment of Dr. Dean F. Smiley and Fred V. Hein, Ph.D. has added immeasurably to the efficiency of the bureau. This bureau should be enthusiastically supported and its activities constantly broadened. Each medium for the distribution of medical information is continually evaluated. For example, the radio script library has been discontinued in favor of the use of electrical transcriptions. Television is being developed experimentally for the transmission of medical information and to develop technics for the use of medical societies generally. Your reference committee recommends the employment as soon as possible of several field men to represent the American Medical Association before lay groups and county medical societies.

11. Council on Industrial Health: Your reference committee commends the activities of this council in its well rounded program for the improvement of industrial health, its advocacy of better labor-management understanding of health problems, the educational program established for further scientific development and education of these programs and finally its efforts to improve the evaluation and advise on industrial disabilities and workmen's compensation.

12. Bureau of Legal Medicine and Legislation: Your reference committee reemphasizes the position taken by the House of Delegates on many occasions in the past in advocating the creation of a federal department of health at the head of which would be an outstanding doctor of medicine and in which could be centralized all the proper health activities of the federal

government other than those associated with the Army, Navy and Veterans Administration. Your reference committee does not believe such health activities could be centralized and properly carried on in a federal department in which health, education and welfare activities are combined.

S. 545, the so-called Taft bill, as now written approximates a legislative background for the development of a health program for the American people as set forth in the broad national health program of the American Medical Association.

The Hill-Burton Hospital Survey and Construction Act has been passed. While not the intent of the act, nevertheless it harbors an implication that aid to needy states might be made contingent on the adoption by these states of model legislation for licensing of hospitals. The state societies should be constantly alert to this implication. Indiana has already passed legislation, without the knowledge of the state medical society, licensing all hospitals.

H. R. 588, to bring barbiturates within the coverage of the Federal Narcotic Laws, will prevent the easy passage of individuals across state lines for the purchase of drugs where the laws governing these drugs differ.

The Medical Aid Act of 1947, S. 678, the Lodge bill, to enable needy persons to obtain expensive drugs, defining "medical aid" to include "x-ray services" and "drugs for various other infectious diseases," seems too liberal.

S. 475, reintroduced, has the same objections as the previous bill in that it has too much centralization. It would permit labor departments to undertake hygiene activities now being done by federal and state public health agencies.

There are many bills pending at this time in Congress of medical interest, but your reference committee does not believe that special comment is necessary at this time.

13. Bureau of Exhibits: Your reference committee wishes praise the entire Scientific Exhibit and hopes that the Army, Navy and other exhibitors will continue their efforts to maintain in the future the high quality of these exhibits. There are few cities with facilities capable of handling the annual session of the American Medical Association. Your reference committee recommends that great care be exercised in the selection of future meeting places.

14. Bureau of Industrial and Personnel Relations: Your reference committee notes with satisfaction that along with the consistent progress our headquarters office has made in recognizing and solving the scientific, economic, sociologic and legislative problems confronting American medicine there has been a recognition of the obligations of the Association to its employees. It is obvious that the effectiveness of headquarters activities depends on the quality and performance of its employees. The successful operation of our newly established Bureau of Industrial and Personnel Relations, in our opinion, will do much to maintain and to improve the caliber of our employees.

15. Council on Pharmacy and Chemistry: The Council on Pharmacy and Chemistry does more than consider evidence on drugs. It promotes research, undertakes product evaluation, best example of which is seen in development of the seal, undertakes educational campaigns in its field of interest, and provides cooperative assistance with other departments at American Medical Association headquarters and elsewhere. Today the outstanding activities of the Council are its evaluation of drugs, cosmetics and allied preparations and the initiation and encouragement of research through its Therapeutic Research Committee, which provides grants, and its Therapeutic Trials Committee, which brings together individuals who have a new idea and those capable of investigating it. Its usefulness to the medical profession is enhanced by the cooperative relationships that it maintains with other organizations. The Therapeutic Trials Committee, although recently formed, is already participating in several major activities. One of the most important factors of this work is that it now provides a means for mutually interested groups to participate jointly in research study.

The Chemical Laboratory is primarily concerned with the testing of drugs that are submitted to the Council on Pharmacy and Chemistry. The importance of this testing does not lie just in examining the contents but in the establishment of standards whereby the drugs can be controlled. The Laboratory is responsible for creating these standards for a large percentage of drugs that come to its attention. Your reference committee commends the work of this council.

16. The Council on Foods and Nutrition: Your reference committee commends the work of this council. It is somewhat similar to that of the Council on Pharmacy and Chemistry except that it is interested in nutrition. The most important part of its work today is concerned with the preservation of the original ingredients of foods and with the proper restoration of foods from which one or more vital factors may have been removed through processing.

17. The Council on Physical Medicine: During the war the Council on Physical Medicine was much interested in rehabilitation. Today it is able to turn more of its attention to the evaluation of products in a field that is still new and not too well known and the need of clarification supported by education. Among the problems that are of particular concern to the council is the use and danger attendant on atomic energy. More recently the Council on Physical Medicine was charged with a responsibility of aiding the Committee on American Health Resorts. Your reference committee commends the work of this council.

18. The Bureau of Investigation: This bureau contains a wealth of material not generally appreciated and which could provide much help for all physicians and their organized associations. It is the one bureau where information may be had concerning quackery and charlatans. One of its most useful procedures is the assistance it gives to schools, clubs and other lay groups.

19. Division of Therapy and Research: These units of the Division of Therapy and Research provide much of the American Medical Association activities in research, product evaluation and the promotion of national therapeutics. Because the problems of these units are frequently related, it is best for them to be grouped for joint consideration where indicated.

The councils welcome inquiries concerning some 200,000 items on which there is information on file in the Bureau of Investigation. The work of these councils and the bureau have become internationally known and today are serving as a model for similar efforts in countries throughout the world.

At the time of the annual session the work of the councils and the bureau is of special aid to the sections, the Secretary's office and the business department, when new ideas and technics are proposed for presentation at the meeting.

20. Bureau of Information and Committee on Rural Medical Service: Your reference committee is pleased with the enthusiastic work of the Committee on Rural Medical Service but also recognizes some overlapping of effort by the Bureau of Information. The latter bureau may later be discontinued but for the present your committee recommends for efficiency and personnel reasons that both the Bureau of Information and the Committee on Rural Medical Service remain as independent units and that their efforts be coordinated through the Council on Medical Service and that Mrs. Shuler be maintained as the Secretary of the Committee on Rural Medical Service.

21. Conference of County Medical Society Officers—Grass Roots Conference: Your reference committee has received very favorable comments on the first meeting held prior to the opening of the American Medical Association session at Atlantic City. Those in attendance were enthusiastic about the conference. Your reference committee recommends the continuation of the conference.

22. American Red Cross Blood Program: Your reference committee recommends the action taken by the Board of Trustees in approving in principle the Red Cross plan for the establishment of a national blood program with the understanding that the operation should be maintained on a community level with the approval of the county medical societies concerned.

23. National Emergency Medical Service: Your reference committee notes with approval the creation in 1945 of the Committee on National Emergency Medical Service and the supple-

menting action of that committee. It earnestly desires the continuation of the study and planning of this committee.

24. Actions with Reference to Committees: Your reference committee notes with confidence that proper committees have been appointed to study closer relationships between the medical and dental professions and one to serve as liaison between the Veterans Administration and the American Medical Association.

25. Addenda: Your reference committee has reviewed the grants for medical research and approves them.

26. Board of Trustees: Your reference committee recognizes the unselfish devotion of each member of the board of trustees to the principles of the American Medical Association and wishes to inform physicians that the affairs of their Association are in splendid hands. It congratulates the House of Delegates in their selection of men of such integrity and faithfulness to those principles. Our affairs are in good hands.

SUPPLEMENTARY REPORT OF THE BOARD OF TRUSTEES

1. Health Problems of Secretary of Interior: The Board of Trustees, learning that the budget of the Department of the Interior for health work in United States possessions—Alaska, Hawaii, the Virgin Islands, etc.—had been drastically reduced and that the Secretary of the Department would be unable to provide the indigent in those countries with much needed medical service, appointed a committee, consisting of the Executive Committee, the Chairman of the Board, the Secretary and General Manager and the Editor, to confer with him.

At the request of Mr. Krug, Secretary of the Interior, this conference was held in Washington. The suggestion was made and adopted that teams of competent consultants—clinicians, not investigators—from hospitals or similar organizations should be invited to be sent by the Department of the Interior for periods of from two to three weeks to consult with the full time staff of the hospital to which they are assigned on the care of these wards of the government and to conduct clinics for the indigent with a view to providing them with a high grade of medical service.

Mr. Krug appointed the Executive Committee of the Board of Trustees, the Secretary and General Manager and the Editor of The Journal, with his chief assistant, Dr. W. A. Morgan, as an executive, to constitute the committee to select the teams. When a team is ready to embark, Dr. Morgan will notify the staff of the hospital to which it is assigned with a view to having it select enough difficult cases so that the time of the consultants will not be wasted.

Your reference committee heartily approves of this action.

2. World Medical Association: The House of Delegates has been informed of the preliminary meetings preparatory to the formation of a World Medical Association and this matter is included in the report of the Board of Trustees. Dr. E. L. Henderson and Dr. Louis Bauer of the Board of Trustees represented the Association at a preliminary organization meeting in London. Dr. Henderson and Dr. Bauer, together with Dr. Ernest Irons as an observer, have been designated to represent the Association at a meeting to be held later in the year. This would seem to be an opportunity and responsibility of the American Medical Association to assist in the development of a world medical front in meeting problems as they develop in the activities of the World Health Organization and in the divisions of the United States. Your reference committee concurs in this action.

3. A Pan American Medical Federation is in process of development and Dr. Harrison H. Shoulders, Dr. Charles Gordon Heyd and Dr. Austin Smith represented the American Medical Association at a preliminary meeting at Havana last autumn. Pan American nations are looking to the United States and Canada for leadership in medical progress, and this would seem to be a helpful measure in the promotion of higher standards of medical care in the Western Hemisphere. Your reference committee concurs in this action.

4. Liaison Committee with Veterans Administration: The Board of Trustees has appointed a committee to serve as a means of liaison with the Veterans Administration in consideration of frequently developing problems of veterans' medical care. Dr. Herbert H. Bauckus, Buffalo; Dr. Edgar P. McNamee, Cleveland; Dr. H. H. Shoulders, Nashville, Tenn.; Dr. R. L. Sensenich, South Bend, Ind., and Dr. George F. Lull, Chicago, were named to represent the Association. This committee was appointed by the Board of Trustees because of the apparent emergencies so frequently developing. Your reference committee concurs in this action.

5. Resolutions on Insurance Against Loss of Wages During Sickness: Resolutions introduced by Dr. Burgess at San Francisco concerning loss of wages during sickness and the report of the reference committee were referred to the Council on Medical Service. That Council, however, is at a loss to interpret the meaning of the report of the reference committee and the Board of Trustees referred this question to the Judicial Council for interpretation. The Judicial Council has now clarified the meaning of the reference committee's report and the matter has been referred to the Council on Medical Service for study and report to the Board of Trustees. Your reference committee concurs in this action.

6. Woman's Auxiliary: The office of the Woman's Auxiliary of the American Medical Association is now located in the headquarters of the American Medical Association. This should make possible a far more effective coordination of the activities of the Auxiliary and the Association. Your reference committee considers this a good move.

7. Costs of Operation: The costs of operation of the Association have increased very greatly in the last several years. The activities of the Association have been greatly expanded. Operating costs in employment of personnel to carry on these activities are the major items in those increases. However, material costs, especially paper, have increased very greatly. Proposed legislation to increase United States postal rates if enacted would add approximately $89,999 to the annual costs of the Association. The income of the Association is derived from advertising and Journal subscriptions. As the $8 annual subscription price of The Journal is only a minor fraction of the cost of the production of The Journal, it is evident that the activities of the Association are dependent on the advertising. The Board of Trustees found it necessary to make some reduction in the operating budgets in order to avoid going into reserve set up for the safety of already established activities of the Association. This information is to assist the House in the consideration of proposals of new activities that may be presented to the House. Your reference committee considers this an essential factor in any consideration of new activities recommended in the House.

8. Resignation of Mr. Raymond Rich and Mr. Charles Swart: Your reference committee approves the action of the Board of Trustees in accepting the resignations of Mr. Raymond Rich and Mr. Charles Swart.

Respectfully submitted,

Elmer Hess, Chairman.
Thomas F. Thornton.
Allen G. Rice.
Albert A. Gartner.
Theodore H. Harwood.

Report of Reference Committee on Miscellaneous Business

Dr. James Z. Appel, Chairman, presented a report, which, on motions of Dr. Appel, duly seconded and carried, was adopted, after amendment, section by section and as a whole. The report as amended reads:

1. Supplementary Report of the Council on Medical Service: Your committee after careful study of the report of Dr. James R. Miller and his advisory committee which concerns "Planning for the Chronically Ill" agrees with the Council on Medical Service that Dr. Miller and the advisory committee should be commended for this report. It further concurs that Dr. Miller and his committee be authorized to proceed further in investigating and evaluating these problems. It is so impressed with this report that it does not believe the report

should lie hidden in the records of the American Medical Association but suggests to the Council on Medical Service that it be published widely and as a further suggestion believes that the report should not only appear in The Journal of the American Medical Association but also might be used as a basis for articles in Hygeia. It further suggests that copies of the report be forwarded to departments of health and welfare of the states of the Union.

2. Resolution on Preparation and Presentation of Resolutions: In the study of this resolution, your committee finds on page 23 of the Handbook the following: "All reports of committees, resolutions, written notices, etc., must be presented in triplicate . . ." Also in the Constitution and By-Laws it finds under Standing Rules of the House of Delegates the following resolution, adopted at Boston, June 7, 1906: "*Resolved*, That in the future all reports, resolutions, amendments to Constitution and By-Laws, etc., be furnished in duplicate . . ." There appears to be an inconsistency in our present procedure and our standing rules. Your committee appreciates the advantages to be gained by the principles of this resolution and believes they should be approved with the amendment that eight copies be presented at the time a resolution is read rather than six copies as indicated in the resolution. It further recommends that this resolution be an amendment to the Standing Rules of the House of Delegates and replace that portion of the Standing Rules referred to above.

3. Resolution on Listing of Names in Daily Bulletin: The principles involved in this resolution have been enunciated by many of the Fellows of the American Medical Association. Your committee recommends the adoption of the resolution and amends it by adding the words "whenever possible."

4. Resolution on Retired Members of House of Delegates: The principles of this resolution are laudable but are so broad that they become very cumbersome. Your committee is at a loss to see how, if this resolution is adopted, the Secretary of the Association will not be forced, year after year, to send congratulatory letters to living ex members of the House of Delegates. Such letters would become meaningless by their annual recurrence. Your committee therefore recommends that this resolution be not adopted.

5. Resolution on Facilitating Efficiency of Work of House of Delegates: Your reference committee is particularly interested in the provisions of this resolution. Any one who has served on a reference committee has had it brought home to him forcefully. The advantages to be obtained by having the purposes of reports and resolutions enunciated by those who are interested, anything that will stimulate further interest in the deliberations of reference committees is of value. Your committee recommends the adoption of this resolution.

Respectfully submitted,

James Z. Appel, Chairman.
Stephen R. Monteith.
John W. Cline.
Hugh P. Smith.
Edward H. McLean.

Report of Reference Committee on Emergency Medical Service

Dr. C. H. Phifer, Chairman, presented a report, which, on motions of Dr. Phifer, duly seconded and carried, after discussion, was adopted as amended section by section and as a whole. The report as amended reads:

REPORT OF COMMITTEE ON NATIONAL EMERGENCY MEDICAL SERVICE

Your reference committee has reviewed in detail the report of the Committee on National Emergency Medical Service. It desires to commend the committee for the diligence with which it has pursued the tasks assigned it by the Board of Trustees at the direction of the House of Delegates.

1. Your reference committee is greatly impressed by the committee's recommendation for the very urgent need for continuous national planning for emergencies, especially in the fields of medical service, health, sanitation and emergency mobilization as well as the necessity of continuous alert supervision of all developments in these fields. In the opinion of your reference committee the possibility of the new aspects of total warfare and special weapons require that the developments and planning for *medical care be continuous. It is,* furthermore, the opinion of your reference committee that this is a major project before your House of Delegates and that it warrants continuing investigation, study and most careful consideration and planning.

2. Your reference committee concurs in the following recommendations of the Committee on National Emergency Medical Service and recommends their adoption:

(*a*) The President of the United States of America and the Congress should be respectfully urged:
   (1) That in war and in peace the Surgeons General of the armed forces have the authority and responsibility for participation, with commensurate rank and at the level of the Chief of Staff and the Chief of Naval Operations of the armed forces, in all military and naval planning, organization and operations as these relate to medical, health, sanitary and welfare services and for the assignment and utilization of medical and allied personnel at home and abroad.

(*b*) That the Secretary of War and the Secretary of the Navy and such other cabinet officers as may be charged with responsibility for our national defense give consideration to possible civilian requirements in a total war in the planning, location and construction of military hospitals and that they reexamine their organizational tables and other procedures used during World War II in order to avoid (1) the medical overstaffing of units; (2) the wasting of the time of doctors of medicine in the performance of nonprofessional duties; (3) the *removal of an excessive number of doctors of medicine* from civilian hospitals and from civilian practice, and (4) a rather widespread failure to make assignments, determine rank and provide for the rotation of doctors of medicine on the basis of their professional qualifications, experience and age.

(*c*) The American Medical Association should go on record as favoring the creation of a National Emergency Medical Service Administration as a continuing function of government, such administration to consist of representatives of the Advisory Board for Medical Specialties, American College of Physicians, American College of Surgeons, American Dental Association, American Hospital Association, Catholic Hospital Association, Protestant Hospital Association, American Medical Association, American Nurses Association, American Pharmaceutical Association, American Public Health Association, American Veterinary Medical Association and Association of American Medical Colleges.

3. National Emergency Medical Service Administration: This Administration shall be charged with the responsibility at all times (1) for effecting plans for total mobilization of the medical and allied resources of the nation; (2) for the procurement and allotment of medical and allied personnel in case of a national emergency; (3) for the coordination of civil and military medical and allied services in times of threatened or actual national emergency, provided that in the exercise of this function there shall be added to the Administration the following members: the Surgeon General, U. S. Army; the Surgeon General, U. S. Navy; the Surgeon General, U. S. Public Health Service; the Air Surgeon; the Medical Director, Veterans Administration; a representative of the National Research Council, and a representative of the American Red Cross.

4. Creation of Council on National Emergency Medical Service: In reference to that part of the report that pertains to the continuous study of this very important assignment, your reference committee concurs in the recommendations of your Committee on National Emergency Medical Service and recommends that this House of Delegates authorize the Board of Trustees of the American Medical Association to create and

appoint a standing committee to be designated as the Council on National Emergency Medical Service.

5. Commendation of Work of Committee: Your reference committee commends the Committee on National Emergency Medical Service for the very exhaustive investigation and study which has resulted in this timely, efficient and epochal conclusive report. It recommends that the House of Delegates extend a vote of thanks to the members of this committee.

Respectfully submitted,

Charles H. Phifer,
Chairman.
Herbert P. Ramsey.
James R. McVay.
Frank L. Cole.
Morton D. Willcutts.
Thomas A. Foster.
George P. Johnston.

Report of Reference Committee on General Medical Practice

Dr. Wingate M. Johnson, Chairman, presented the following report, which was adopted section by section and as a whole, on motions of Dr. Johnson, duly seconded and carried:

Your committee had referred to it the supplementary report of the Council on Medical Education and Hospitals together with a resolution from the Colorado State Medical Society and resolutions from the Medical Society of the County of Kings.

1. Supplementary Report of Council on Medical Education and Hospitals Dealing with Upholding Prestige of General Practitioners: Your committee feels that this report of the Council should do much to clarify the atmosphere so far as the relationship of the general practitioner to hospitals is concerned. Your committee recommends the adoption of this report.

2. Resolution on Change of Policy of American Specialty Boards and Resolutions on Inclusion of General Practitioners on Staffs of Hospitals: Your committee recommends that these resolutions be referred to the Council on Medical Education and Hospitals for consideration and for such recommendations to the specialty boards as may seem warranted.

Respectfully submitted,

Wingate M. Johnson,
Chairman.
Thomas K. Gruber.
Warren L. Allee.
Howard E. Griffin.
H. G. Hamer.
E. Vincent Askey.
Forrest L. Loveland.

The House recessed at 12 noon to reconvene at 1 p. m.

Thursday Afternoon, June 12

The House reconvened at 1 p. m., Thursday, June 12, with the Speaker, Dr. R. W. Fouts, in the chair.

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, stated that 173 delegates had been seated.

Roll Call

The Secretary, Dr. George F. Lull, called the roll.

Minutes

On motion of Dr. Val H. Fuchs, Louisiana, seconded by Dr. Clark Bailey, Kentucky, and carried, the House dispensed with the reading of the minutes.

ELECTION OF OFFICERS

Nominations for President-Elect

Dr. F. S. Crockett, Indiana, nominated Dr. R. L. Sensenich, South Bend, Ind., for President-Elect and the nomination was seconded by the delegations from Pennsylvania, Illinois, Alabama, Florida, Rhode Island, New York, Connecticut, Michigan, California, Ohio and Nebraska.

Dr. Walter E. Vest, West Virginia, nominated for President-Elect Dr. James R. Bloss, Huntington, W. Va., and the nomination was seconded by the delegation from Missouri, and Dr. Arthur J. Bedell, Section on Ophthalmology.

On motion of Dr. E. R. Samuel, Pennsylvania, seconded by several and carried, the nominations were closed.

Nomination for Vice President

Dr. James R. Reuling, New York, placed in nomination for Vice President the name of Dr. Thomas A. McGoldrick, Brooklyn. The nomination was seconded by Dr. T. K. Gruber, Michigan.

Dr. Roy B. Henline, Section on Urology, moved that the nominations be closed, and the motion was seconded by several and carried.

Nomination for Secretary

Dr. Arthur J. Bedell, Section on Ophthalmology, nominated Dr. George F. Lull, Chicago, for Secretary. The nomination was seconded by several. On motion, duly made, seconded and carried, nominations for Secretary were closed.

Nomination for Treasurer

The Speaker announced that nominations for Treasurer are submitted by the Board of Trustees.

Dr. Elmer L. Henderson, Trustee, reported that the Board of Trustees placed in nomination for Treasurer the name of Dr. Josiah J. Moore, Chicago, the present Treasurer. On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by several and carried, the nomination of Dr. Moore was confirmed and the Speaker announced that Dr. Josiah J. Moore was nominated as Treasurer.

Nomination for Speaker of House of Delegates

The Vice Speaker, Dr. F. F. Borzell, assumed the chair and called for nominations for Speaker of the House of Delegates.

Dr. Karl S. J. Hohlen, on behalf of the Nebraska delegation, placed in nomination for Speaker of the House of Delegates the present incumbent, Dr. R. W. Fouts, Omaha, to succeed himself, and the nomination was seconded by several.

Nominations for Speaker of the House of Delegates were then closed on motion regularly made, seconded and carried.

Nomination for Vice Speaker of House of Delegates

The Speaker resumed the chair, and Dr. William Bates, Pennsylvania, placed in nomination for Vice Speaker of the House of Delegates the name of Dr. F. F. Borzell, Philadelphia, and the nomination was seconded by several. On motion of Dr. James Beebe, Delaware, seconded by several and carried, the nominations for Vice Speaker were closed.

Nominations for Trustees

TRUSTEE TO SUCCEED DR. R. L. SENSENICH

Dr. B. J. Hein, Ohio, placed in nomination as Trustee to succeed Dr. R. L. Sensenich, whose term has expired and who is not eligible for reelection, the name of Dr. E. J. McCormick, Toledo, Ohio, and the nomination was seconded by several. On motion duly made, seconded and carried, the nominations for Trustee to succeed Dr. R. L. Sensenich were closed.

TRUSTEE TO SUCCEED DR. DWIGHT H. MURRAY

Dr. John W. Cline, California, placed in nomination the name of Dr. Dwight H. Murray, Napa, Calif., as Trustee to succeed himself, and the nomination was seconded by several.

Dr. F. J. L. Blasingame, Texas, placed in nomination the name of Dr. Britton E. Pickett Sr., Carrizo Springs, Texas, and the nomination was seconded by Dr. Howard E. Griffin, Section on General Practice of Medicine, and Dr. Wingate M. Johnson, North Carolina.

Dr. Harry Eno, Isthmian Canal Zone, placed in nomination the name of Dr. Lloyd Noland, Fairfield, Ala., but Dr. Noland immediately declined the nomination.

On motion regularly made, seconded and carried, the nominations were closed.

The House recessed a few minutes to await the arrival of the President, Dr. Edward L. Bortz.

Nominations by Board of Trustees

NOMINATION FOR MEMBER OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS TO SUCCEED DR. JOHN H. MUSSER

Dr. Elmer L. Henderson, Trustee, announced that the Board of Trustees placed in nomination as a member of the Council to succeed Dr. John H. Musser, the names of Dr. John H. Musser, New Orleans, and Dr. Wingate M. Johnson, Winston-Salem, N. C.

NOMINATION FOR MEMBER OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS TO SUCCEED DR. CHARLES GORDON HEYD, RESIGNED

Dr. Elmer L. Henderson, Trustee, announced that Dr. Charles Gordon Heyd, New York, had resigned as a member of this Council and his resignation had been accepted. The Board of Trustees, therefore, placed in nomination to succeed Dr. Heyd the names of Dr. James J. Waring, Denver, and Dr. William S. Middleton, Madison, Wis.

Dr. Wingate M. Johnson withdrew his name from nomination.

NOMINATION FOR MEMBER OF COUNCIL ON MEDICAL SERVICE TO SUCCEED DR. JAMES R. MCVAY

Dr. Elmer L. Henderson for the Board of Trustees placed in nomination to succeed Dr. James R. McVay as a member of the Council on Medical Service the names of Dr. James R. McVay, Kansas City, Mo.; Dr. James Stevenson, Tulsa, Okla., and Dr. Joseph D. McCarthy, Omaha.

NOMINATION FOR MEMBER OF COUNCIL ON MEDICAL SERVICE TO SUCCEED DR. RAYMOND L. ZECH

Dr. Elmer L. Henderson, for the Board of Trustees, stated that Dr. Raymond L. Zech had stated that he could not see his way clear to continue on the Council and for that reason the Board did not nominate him to succeed himself. The Board placed in nomination to succeed Dr. Raymond L. Zech on the Council on Medical Service the names of Dr. Jesse D. Hamer, Phoenix, Ariz., Dr. Raymond F. Peterson, Butte, Mont., and Dr. E. N. Roberts, Pocatello, Idaho.

Dr. James Stevenson, Tulsa, Okla., withdrew his name from nomination, as did Dr. Joseph D. McCarthy, Omaha.

Nominations by President

NOMINATION FOR MEMBER OF JUDICIAL COUNCIL TO SUCCEED DR. LLOYD NOLAND

Dr. Edward L. Bortz, President, nominated Dr. Lloyd Noland to succeed himself as a member of the Judicial Council.

NOMINATIONS FOR MEMBERS OF THE COUNCIL ON SCIENTIFIC ASSEMBLY TO SUCCEED DR. CLYDE L. CUMMER AND DR. EDWARD L. BORTZ

Dr. Edward L. Bortz, President, nominated for membership on the Council to succeed Dr. Clyde L. Cummer the name of Dr. Stanley P. Reimann, Philadelphia, and, to complete the unexpired term of Dr. Edward L. Bortz, the name of Dr. L. B. Jackson, San Antonio, Texas.

Nominations by Board of Trustees

Dr. Elmer L. Henderson, for the Board of Trustees, announced that since Dr. Edward J. McCormick has been proposed for Trustee and is unopposed, this leaves another vacancy on the Council on Medical Service to complete the unexpired term of Dr. McCormick. The Board placed in nomination for this position the names of Dr. Robert Novy, Detroit, Dr. L. Howard Schriver, Cincinnati, and Dr. Elmer Hess, Erie, Pa.

Dr. Schriver withdrew his name from nomination.

Places of *1948, 1949* and *1950* Annual Sessions

After Dr. Robertson Ward, California, had extended an invitation to meet in San Francisco in 1950, Dr. Elmer L. Henderson, for the Board of Trustees, presented the following report:

The Board of Trustees recommends that the 1948 annual session be held in Chicago, and that the 1949 session be held in Atlantic City instead of in St. Louis in 1948 and in New York in 1949 as previously voted. Invitations for the 1950 session have been received from Atlantic City and San Francisco. In view of the fact that many cities are now considering building convention halls and hotels, the Board of Trustees recommends that the selection of the meeting place for 1950 be postponed until the Board of Trustees has more information regarding facilities of various cities for housing a session of the Association.

Dr. T. K. Gruber, Michigan, moved that the House concur in the recommendation of the Board and the motion was seconded by Dr. Thomas S. Cullen, Maryland.

Dr. Hilton S. Read, New Jersey, moved to amend the motion for the House to concur in the recommendations of the Board of Trustees but proceed to vote on the 1950 meeting place as San Francisco. This motion was seconded by Dr. John W. Green, California, and carried after discussion.

The Speaker announced that the motion as amended would be that the annual session in 1948 be held in Chicago, that of 1949 in Atlantic City and that of 1950 in San Francisco. The motion as amended carried.

It was moved by Dr. Rollo K. Packard, Illinois, that the candidates without opposition be elected by acclamation. The motion was seconded by Dr. E. R. Samuel, Pennsylvania, and carried.

The Secretary announced that the following named candidates had no opposition: Dr. Thomas A. McGoldrick, New York, for Vice President for the ensuing year; Dr. George F. Lull, Chicago, for Secretary for the ensuing year; Dr. Josiah J. Moore, Chicago, for Treasurer for the ensuing year; Dr. R. W. Fouts, Omaha, for Speaker of the House of Delegates for the ensuing year; Dr. F. F. Borzell, Philadelphia, for Vice Speaker of the House of Delegates for the ensuing year; for Trustee to succeed Dr. R. L. Sensenich for a term of five years, Dr. E. J. McCormick, Toledo, Ohio; for member of the Judicial Council for a term of five years, Dr. Lloyd Noland, Fairfield, Ala.; for member of the Council on Medical Education and Hospitals for a term of seven years, Dr. John H. Musser, New Orleans; for member of the Council on Scientific Assembly for a term of five years, Dr. Stanley P. Reimann, Philadelphia; for member of the Council on Scientific Assembly to complete the unexpired term of Dr. Edward L. Bortz ending in 1948, Dr. L. B. Jackson, San Antonio, Texas, and for member of the Council on Medical Service for a term of three years, Dr. James R. McVay, Kansas City, Mo.

The Vice Speaker assumed the Chair.

It was moved by Dr. Lowell S. Goin, California, seconded by Dr. Thomas S. Cullen, Maryland, and carried unanimously that the Secretary cast the ballot of the House for each of the nominees without opposition whose names the Secretary had just read and the Secretary cast the ballot of the House electing these candidates and the Vice Speaker declared them elected as indicated.

The ballot sheets were distributed by the tellers for vote on the remaining candidates for office and these ballots were deposited in the ballot box by each delegate on roll call by the Secretary.

On motion of Dr. Forrest J. Pinkerton, Hawaii, duly seconded and carried, the tellers retired to tabulate the ballot.

Nominations for and Election of Affiliate Fellows

Dr. George F. Lull, Secretary, read the following nominations for Affiliate Fellowship made by the various constituent associations and approved by the Council on Scientific Assembly, who were elected to Affiliate Fellowship on motion of Dr. E. S. Hamilton, Illinois, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology and carried.

CALIFORNIA

Avery, John Waite, Hollywood.
Beebe, J. L., Laguna Beach.
Boyce, Lee, San Marcos.
Burnham, Clark J., Berkeley.
Clark, Wm. R. P., San Francisco.
Coffey, G. C., Ventura.
Duffiey, G. W., Sacramento.
Fogg, E. S., Wasco.
Galbraith, A., Oakland.
Hilliard, Carlos G., Redlands.
Laist, Otto, San Francisco.
Lacey, Martin J., Albany.
Legge, Robert T., Berkeley.
McCausland, W. S., Chula Vista.
Mortensen, Wm. S., Los Angeles.
Ramsay, Robert E., Pasadena.
Schmitt, Lionel S., San Francisco.
Singer, J. J., Beverly Hills.
Walker, G. W., Fresno.
Walker, J. R., Carmel.
Wallace, W. S., Orange.

ILLINOIS

Gill, John Joseph, Chicago.
Thomas, Victor D., Chester.
Voorheis, Charles H. Hutsonville.
Wheeler, A. M., Oak Park.

IOWA

Vollmer, Karl, Davenport.

MINNESOTA

Robbins, C. P., Winona.

MISSOURI

Bassett, Charles W., Madison, N. Y.
Grauerholz, J. W., Kansas City.
Krebs, Frank J. V., Clayton.
MacDonald, J. W., St. Louis.
Reid, C. T., Joplin.
Schisler, Edwin, St. Louis.
Skinner, John O., Kansas City.
Stewart, James, Jefferson City.
Woodruff, Frederick E., St. Louis.
Zahorsky, John, St. Louis.

NEBRASKA

Fahnestock, C. L., Lincoln.
Furgason, Allen P., Lincoln.
Lyman, R. A., Lincoln.
McCrea, E. L., Table Rock.
Newell, H. J., Alexandria.
Teal, F. F., Lincoln.

NEW YORK

Fronczak, Francis E., Buffalo.
Sobel, Jacob, New York.
Titus, Edward C., New York.

PENNSYLVANIA

Hartman, Lawton M. Jr., York.
Thomas, T. Turner, Philadelphia.
Yagle, George N., Red Lion.

TEXAS

Hathcock, Alfred L., Palestine.

WEST VIRGINIA

Kemper, A. J., Lost Creek.

WISCONSIN

Boslough, Arthur William, Wausau.
Brown, George V. I., Milwaukee.
Creasy, L. E., Monroe.
Davies, R. E., Waukesha.
Dodd, John M., Ashland.
Donnelly, Francis J., North Lake.
Egan, Gregory J., LaCrosse.
Evans, Joseph S. Jr., Madison.
Ground, William E., Superior.
Leicht, Phillip, Lake Mills.
Lueck, George W., LaCrosse.
Malloy, T. E., Random Lake.
McHugh, Francis T., Chippewa Falls.
Perrin, H. E., Star Prairie.
Senn, Christian U., Ripon.
Somers, A. J., Chippewa Falls.
Wilkinson, M. R., Oconomowoc.

Nominations for and Election of Associate Fellows

The Secretary presented the following nominations for Associate Fellowship approved by the Judicial Council or by the sections indicated and the nominees were elected to Associate Fellowship on motion of Dr. E. S. Hamilton, Illinois, seconded by Dr. L. J. Kosminsky, Arkansas, and carried:

JUDICIAL COUNCIL

Hume, Walter F., Auburndale, Mass.
Den Dulk, F. W., Suyo, Anglo Egyptian Sudan.
Laughead. Chas. A., Assiut, Egypt.
Martin, Grace K., Shanghai, China.
Richli, Elmira M., Surat, India.
Wade, H. W., Palawan, P. I.
Widdowson, Harold R., Norwood, Pa.

SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

Beyer, Karl H., Bala Cynwyd, Pa.
Feirer, William A., Narberth, Pa.
Hellbaum, Arthur A., Oklahoma City.
Hueper, W. C., Scarsdale, N. Y.
Lisi, Alfred G., Philadelphia.
Sidwell, Albert E. Jr., Chicago.

SECTION ON PATHOLOGY AND PHYSIOLOGY

Field, John, Stanford University, Calif.

Miscellaneous

On motion of Dr. E. S. Hamilton, Illinois, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, Dr. Robert T. Devereux, Pennsylvania was granted permission to present a Resolution on Felicitations, no copy of which was presented to the Secretary, which was adopted on motion of Dr. George W. Kosmak, New York, duly seconded and carried.

Dr. E. S. Hamilton, Illinois, moved that the Speaker of the House appoint an interim committee of five or seven men as he sees fit to study methods and means whereby the work of the House can be expedited, the committee to report back at the supplemental session. The motion was seconded by Dr. George W. Kosmak, New York, and carried.

The Vice Speaker, in the Chair, recognized the duly reelected Speaker of the House, who spoke as follows:

I didn't know that was coming, but I do want to take this opportunity to express our very sincere appreciation of the cooperation we have had from the delegates at this session, through the rather long, strenuous sessions, as Dr. Hamilton has just said. It is due wholly to the cooperation that you have given us all the way along that we were able to dispose of many things, and I think most of them in a manner that we will be satisfied with in future days to come.

I also want to express my appreciation and gratefulness for the recognition again tendered me. I will give you my best and hope to see you all again in December. Thank you a lot.

The Vice Speaker spoke as follows: While we are waiting for the final count on the election, may I take this opportunity also to humbly thank the House of Delegates for its renewed acceptance of my services in the past and I hope that we can continue to carry on with your cooperation.

Dr. H. B. Everett, Tennessee, moved that before the House adjourns it would be entirely in order that this House express its appreciation to the Medical Society of New Jersey and the Atlantic City citizens for the hospitality that we have received at this session, which has been fine for the large number of people that we have had here. That should be a part of our record at this meeting, and the local committee should be included. The motion was seconded by several and carried.

Dr. James R. Reuling, New York, moved that in the preparation for this session in Atlantic City, there have been numerous committees who have worked very hard and very long under the chairmanship of Dr. Edward Cunniffe and all members of the committees who have worked so hard to make this, our Centennial Celebration, the grand success it has been, should receive the thanks of this House. The motion was seconded by Dr. Walter E. Vest, West Virginia, and carried.

The Vice Speaker asked if there were any other expressions of appreciation or criticism while we are waiting for the tellers.

Dr. William Bates, Pennsylvania, moved to extend the thanks of this House to all those from 535 North Dearborn Street, who have done everything before and during this session to make our life more pleasant, and the motion was seconded by several.

The Vice Speaker stated that it has been moved and seconded that a vote of thanks be extended to our friends and members of 535 North Dearborn Street, and, if he may be permitted to to state explicitly, Miss Niehoff and Miss Whelan. The motion carried.

Dr. L. J. Kosminsky, Arkansas, moved that the House of Delegates extend a vote of thanks to the retiring President who has done some outstanding work during his year.

The audience arose and applauded, and the Vice Speaker stated that he knew a vote was wanted but that it was obvious.

Dr. H. H. Shoulders, Past President, spoke as follows: I would not dare let this opportunity pass without expressing to you again my very great appreciation of the many courtesies that have been extended to me, the many hospitalities, and the perfectly wonderful cooperation. My memory of the functions of this House goes back a good many years, first as a member, next as a Vice Speaker, next as your Speaker, finally as President-Elect and President. It is a record of which I am very proud, but I am proud of nothing so much as the affection and esteem that you have so graciously displayed.

The Vice Speaker declared a short recess, subject to the receipt of the report of the tellers.

Report of Tellers

The Speaker resumed the chair.

Dr. J. Wallace Hurff, Chairman, reported the results of the election:

The vote for President-Elect was 123 for Dr. R. L. Sensenich and 35 for Dr. James R. Bloss. The Speaker declared Dr. R. L. Sensenich elected to the office of President-Elect of the American Medical Association.

On motion of Dr. Walter E. Vest, West Virginia, duly seconded and carried, the election of Dr. Sensenich was made unanimous.

Dr. Hurff reported that the vote for member of the Board of Trustees to succeed Dr. Dwight H. Murray was 125 for Dr. Murray and 32 for Dr. B. E. Pickett Sr., and the Speaker declared Dr. Dwight H. Murray, Napa, Calif., elected Trustee for a term of five years.

On motion of Dr. B. E. Pickett Sr., Texas, seconded by several and carried, the election of Dr. Dwight H. Murray was made unanimous.

Dr. Hurff reported further that the vote for a member of the Council on Medical Education and Hospitals to fill out the unexpired term of Dr. Charles Gordon Heyd, resigned, expiring in 1951, stood 116 for Dr. William S. Middleton and 26 for Dr. James J. Waring, and the Speaker declared Dr. Middleton elected.

Dr. Hurff reported further that the vote for the election of a member of the Council on Medical Service to fill the unexpired term of Dr. Edward J. McCormick, now a Trustee, to expire in 1949, was 85 for Dr. Elmer Hess and 60 for Dr. Robert Novy. The Speaker declared Dr. Elmer Hess elected.

Dr. Hurff reported the vote for the election of a member of the Council on Medical Service to succeed Dr. Raymond L. Zech, 26 for Dr. R. F. Peterson, 60 for Dr. Jesse D. Hamer and 55 for Dr. E. N. Roberts. The Speaker declared that since no one had received a majority of the votes cast, a new ballot would have to be taken omitting the name of Dr. R. F. Peterson.

The tellers spread the ballot and the Secretary announced that Dr. Hamer had received 44 votes and Dr. Roberts 37. The Speaker declared Dr. Jesse D. Hamer, Phoenix, Ariz., elected a member of the Council on Medical Service for a term of three years.

Address of President-Elect Dr. R. L. Sensenich

Dr. R. L. Sensenich, President-Elect, was presented by the delegation from Indiana and addressed the House as follows:

Mr. Speaker and Members of the House: Anyone who has had so long connection with the affairs of the American Medical Association and has been so proud of its progress could not fail to be fully appreciative of the honor of being selected as its President-Elect. I am greatly honored and I shall do my best to be worthy of that confidence.

I have something a bit more in mind. I don't know that I can in this moment tell it well. Perhaps it is only a bit of emotion that you may discount. We have all had wide contacts and are familiar with the motivations of the individual physician and the objectives and the progress of the Association. This centennial in our history points to our accomplishments, of which we can be very proud. The Association cannot be given all the credit for the improvement in the general health. However, attention must be directed to the fact that twenty-five years added to the average of the lives of 130,000,000 people is a stupendous dividend.

I am very greatly impressed with what physicians and the American Medical Association can do in the years ahead. This centennial, the Scientific Exhibit, the medical program, the actions of this House of Delegates and the support of the membership in expression of unanimous willingness to cooperate in the activities of the American Medical Association are very, very heartening.

However, no one familiar with medical history and progress could fail to recognize the great responsibility that will rest on the medical profession and the American Medical Association. I should like to feel that this Centennial Celebration is in a sense a rededication of the efforts of the medical profession of America to maintain the old traditions, the high motivations and unselfish guidance in directing the progress of medicine and providing public leadership in matters of health.

I hope that as your President-Elect I may be able to emphasize these high motivations of medical men and organizations.

The House adjourned at 4:30 p. m.

Registration at the Centennial Session

The total registration at Atlantic City was 15,667. Below are summaries by sections and daily by states:

Registration by Sections

Section	June 9	10	11	12	13	Total
Internal Medicine	2,054	593	592	274	41	3,554
Surgery, General and Abdominal	912	406	442	286	37	2,113
Obstetrics and Gynecology	340	181	191	122	20	854
Ophthalmology	246	153	154	105	6	664
Laryngology, Otology and Rhinology	176	96	124	83	13	492
Pediatrics	273	170	152	129	21	745
Experimental Medicine and Therapeutics	58	8	7	7	..	80
Pathology and Physiology	147	67	58	41	4	317
Nervous and Mental diseases	134	73	92	53	25	377
Dermatology and Syphilology	165	141	109	39	5	459
Preventive and Industrial Medicine and Public Health	183	83	43	32	3	344
Urology	127	65	62	63	5	322
Orthopedic Surgery	137	86	114	32	11	380
Gastroenterology and Proctology	388	89	22	27	2	528
Radiology	290	106	102	43	18	559
Anesthesiology	107	45	55	42	15	264
General Practice of Medicine	832	348	258	174	6	1,618
Miscellaneous Topics	13	...	...	...	..	13
Session on History of Medicine	1	1	..	1	..	3
Session on Physical Medicine	30	11	20	9	2	72
Session on Allergy	47	10	15	2	11	85
No section indicated	569	205	282	151	..	1,207
Two sections indicated	114	376	28	43	56	617
Total	7,373	3,313	2,922	1,758	301	15,667

Daily Registration by States

States	Mon.	Tues.	Wed.	Thurs.	Fri.	Total
Alabama	48	13	5	4	1	71
Arizona	26	8	..	2	..	36
Arkansas	21	9	1	1	1	33
California	303	95	23	15	1	437
Colorado	68	15	4	6	1	94
Connecticut	181	64	37	28	4	314
Delaware	28	24	11	39	3	105
District of Columbia	200	70	30	65	7	372
Florida	139	36	7	14	..	196
Georgia	81	30	10	10	1	132
Idaho	13	2	..	..	..	15
Illinois	437	130	43	27	4	641
Indiana	129	58	8	12	2	209
Iowa	48	17	4	5	..	74
Kansas	58	6	2	2	..	68
Kentucky	83	17	4	4	..	108
Louisiana	54	16	4	4	2	80
Maine	14	7	..	3	..	24
Maryland	247	96	55	78	11	487
Massachusetts	283	112	31	50	7	483
Michigan	214	66	21	21	1	323
Minnesota	108	40	12	10	2	172
Mississippi	19	5	2	..	..	26
Missouri	125	42	7	7	2	183
Montana	7	3	..	1	..	11
Nebraska	68	18	1	4	..	91
Nevada	5	4	..	..	..	9
New Hampshire	14	3	3	4	..	24
New Jersey	491	342	629	282	39	1,783
New Mexico	7	1	1	1	..	10
New York	1,263	700	770	260	83	3,076
North Carolina	90	58	9	15	1	173
North Dakota	7	6	..	1	..	14
Ohio	415	135	36	27	3	616
Oklahoma	44	15	2	3	..	64
Oregon	16	8	5	2	1	32
Pennsylvania	963	660	1,058	632	112	3,425
Rhode Island	53	20	4	4	..	81
South Carolina	43	21	..	2	..	66
South Dakota	7	1	..	..	..	8
Tennessee	79	28	5	5	1	118
Texas	172	45	18	4	3	242
Utah	20	8	2	2	..	32
Vermont	15	5	2	2	..	24
Virginia	153	84	18	22	..	277
Washington	49	14	3	1	..	67
West Virginia	79	23	8	9	1	120
Wisconsin	90	23	6	7	..	126
Wyoming	6	2	..	..	..	8
Foreign	290	108	21	61	7	487
Total	7,373	3,313	2,922	1,758	301	15,667

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the Centennial Celebration of the American Medical Association was not only the largest ever presented but also the best in the opinion of numerous visitors. There were many historical exhibits, including rare books and pictures, but the main emphasis was on graduate medical instruction for the physician in the general practice of medicine. Demonstrations were continuous throughout the week in all of the 289 booths, with crowds that taxed the capacity of the aisles. Foreign physicians who were present as guests of the Association expressed amazement at the enormous amount of teaching material presented and at the manner in which physicians of great reputation made themselves accessible to all visitors.

The Special Exhibits subsidized by the Board of Trustees—four in number—were outstanding. The Special Exhibit on Fractures, using five booths, was presented under the auspices of a committee consisting of Dr. Kellogg Speed, Chicago, chairman, Dr. Frank D. Dickson, Kansas City, and Dr. Gordon M. Morrison, Boston. This exhibit has been a feature of the annual sessions almost continuously for twenty years, with Dr. Speed acting as the guiding genius. The Committee on Awards expressed "its deep gratitude, a feeling shared by a whole generation of physicians," to Dr. Speed. A pamphlet describing the exhibit was distributed.

The Special Exhibit on Cardiovascular Diseases occupied seventeen booths. Dr. Paul Dudley White, Boston, was the chairman of a large committee which presented a magnificent display covering all phases of the subject. An interesting feature was a collection of stethoscopes from the earliest models to the present time shown by the Army Institute of Pathology. A pamphlet describing various details of the exhibit was distributed.

The Special Exhibit on Physical Medicine, including physical therapy, occupational therapy and rehabilitation, was shown for the second consecutive year, occupying nine booths. Dr. Frank H. Krusen, Rochester, Minn., chairman, Dr. Winfred Overholser, Washington, D. C., and Dr. Howard A. Rusk, New York, were assisted by a large number of demonstrators. Patients in the various booths added to the interest of the exhibit, requiring a small grandstand to take care of the crowd of visitors. A pamphlet was distributed in connection with the exhibit and motion pictures were shown in an adjoining area.

The Special Exhibit on Fresh Pathologic Material was shown again after a lapse of some years. The committee in charge included Dr. Frank W. Konzelmann, Atlantic City, Dr. Jefferson H. Clark, Philadelphia, and Dr. Edwin S. Gault, Philadelphia, assisted by a large group of demonstrators. Pathologic material was brought daily from Philadelphia for display in addition to material collected in Atlantic City. The constant crowd of visitors at this exhibit gave proof of its teaching value.

Among the many historical exhibits was a group of sixteen booths depicting the activities of the American Medical Association during the past hundred years. Dr. L. M. Tocantins, Philadelphia, contributed material connected with the founding of the Association in 1847 and Dr. Thurman B. Rice, Indianapolis, showed specimens and photographs from the first Scientific Exhibit in 1899.

The Section on Internal Medicine presented a group of twenty-nine exhibits, three of which won awards, including a gold medal. Dr. Thomas C. Garrett, Philadelphia, was the section representative.

The Section on Surgery, General and Abdominal, had twenty-seven exhibits. There were six awards, one of which included a silver medal. Dr. Warren H. Cole, Chicago, was the section representative.

The Section on Obstetrics and Gynecology sponsored a group of ten exhibits, one of which received an award. Dr. Frederick H. Falls, Chicago, was the section representative.

The Section on Ophthalmology presented nine exhibits, one of which received an award. The exhibit committee of the section consisted of Dr. Georgiana D. Theobald, Oak Park, Ill., chairman, Dr. Derrick Vail, Chicago, and Dr. A. B. Reese, New York.

The Section on Laryngology, Otology and Rhinology presented seven exhibits, one of which received an award. The section representative was Dr. Paul H. Holinger, Chicago.

The Section on Pediatrics presented a group of eight exhibits. Dr. Albert V. Stoesser, Minneapolis, was the section representative.

The Section on Experimental Medicine and Therapeutics had fifteen exhibits, one of which won an award. Dr. Robert W. Wilkins, Boston, was the section representative.

The Section on Pathology and Physiology presented fifteen exhibits, two of which received awards. Dr. Frank W. Konzelmann, Atlantic City, N. J., was the section representative.

The Section on Nervous and Mental Diseases presented eight exhibits. The section representative was Dr. A. B. Baker, Minneapolis.

The Section on Dermatology and Syphilology had nine exhibits. There were two awards, one of which was a silver medal. Dr. Francis W. Lynch, St. Paul, was the section representative.

The Section on Preventive and Industrial Medicine and Public Health presented sixteen exhibits. There were three awards, one of which was a bronze medal. Dr. Paul A. Davis, Akron, Ohio, was the section representative.

The Section on Urology presented eleven exhibits, two of which won awards, including a gold medal. Dr. John H. Morrissey, New York, was the section representative.

The Section on Orthopedic Surgery presented eight exhibits with two awards. Dr. David M. Bosworth, New York, was the section representative.

The Section on Gastro-Enterology and Proctology presented ten exhibits. Dr. Donovan C. Browne, New Orleans, served as the section representative.

The Section on Radiology had eleven exhibits. Dr. S. W. Donaldson, Ann Arbor, Mich., served as the section representative.

The Section on Anesthesiology presented six exhibits, one of which received an award. Dr. Urban H. Eversole, Boston, was the section representative.

The Section on General Practice of Medicine presented thirteen exhibits. Dr. J. Craig Bowman, Upper Sandusky, Ohio, served as the section representative.

The Miscellaneous Group included fourteen exhibits, one of which received a bronze medal.

There were two Question and Answer Conferences conducted throughout the week on schedules arranged for each day. Cardiovascular Diseases was presented by a committee of which Dr. E. V. Allen, Rochester, Minn., was chairman. Diabetes was presented under the sponsorship of a group headed by Dr. Howard F. Root, Boston.

The Bureau of Medicine and Surgery, United States Navy, Washington, D. C., presented an exhibit dealing with atomic energy. The Medical Department of the United States Army, Washington, D. C., had a large display showing the activities of the various divisions of the department. The Veterans Administration presented a group of exhibits dealing with its various activities. Each of these services was given a special commendation by the Committee on Awards.

Motion pictures were shown in three rooms adjacent to the exhibits. Fifty-nine pictures were shown each day on a prearranged schedule. Each of the rooms was filled to capacity every day.

Twenty-seven exhibits were presented in connection with papers read before the Scientific Assembly. Forty-five exhibits were also illustrated by motion pictures shown in the motion picture rooms.

REPORT OF THE COMMITTEE ON AWARDS

The Committee on Awards made the following report:

GROUP I

(Awards in Group I are made for exhibits of individual investigations, which are judged on the basis of originality and excellence of presentation.)

The Gold Medal to George E. Burch and Paul Reaser, Tulane Medical School, New Orleans, for the exhibit on Radio Elements and Mechanism of Congestive Heart Failure Radiosodium (Na^{24} and Na^{22}).

The Silver Medal to G. H. Faget, P. T. Erickson and Sister Hilary Ross, U. S. Marine Hospital, Carville, La., for the exhibit on Chemotherapy of Leprosy.

The Bronze Medal to Maurice B. Visscher, A. B. Baker, R. Brown, John Adams, Alan Hemingway, R. Anthony and J. Elam, University of Minnesota, Minneapolis, for the exhibit on the Physiologic Problems of Bulbar Poliomyelitis.

Certificates of Merit, Group I, are awarded to the following (alphabetically arranged):

William H. Feldman and H. Corwin Hinshaw, Mayo Clinic, Rochester, Minn., and Karl Pfuetze, Mineral Springs Sanatorium, Cannon Falls, Minn., for the exhibit on Streptomycin, Experimental and Clinical Observations.

Hugo A. Freund, Gabriel Steiner and Carl E. Duffy, Harper Hospital and Wayne University College of Medicine, Detroit, for the exhibit on Recent Advances in Studies of Rheumatoid Arthritis.

E. S. Gurdjian, J. E. Webster and H. R. Lissner, Wayne University College of Medicine and Grace Hospital, Detroit, for the exhibit on Mechanism of Production of Linear Skull Fracture—Studies with the Stresscoat.

R. J. Huebner and W. L. Jellison, National Institute of Health, U. S. Public Health Service, Bethesda, Md., and Morris Greenberg, City of New York Department of Health, New York, for the exhibit on Rickettsialpox.

In addition, the following exhibits are deemed worthy of Honorable Mention (alphabetically arranged):

That of Leonard F. Bush, C. Zent Garber, William H. Von Lackum and James P. Miller, New York Orthopedic Hospital, New York, on Bone Bank and Homogenous Bone Grafts.

That of Jacob Furth, Cornell University Medical College, New York, on Induction and Characteristics of Ovarian Neoplasms with Hormonal Changes and Hypervolemia.

That of Champ Lyons, H. S. Mayerson and Paul T. DeCamp, Tulane University, New Orleans, on Chronic Shock, the Problem of Reduced Blood Volume in the Chronically Ill Patient.

That of Joe V. Meigs, Ruth M. Graham, Maurice Fremont-Smith, Somers H. Sturgis, Deloris Chapman and Marjorie Soule, Vincent Memorial Hospital, Massachusetts General Hospital, Boston, on Carcinoma of the Cervix: A New Method of Prognosis.

GROUP II

(Awards in Group II are made for exhibits which do not exemplify purely experimental studies but are judged on the basis of excellence of correlating facts and excellence of presentation.)

The Gold Medal to George F. Cahill and Meyer M. Melicow, Squier Urological Clinic, Presbyterian Hospital, New York, for the exhibit on Tumors of the Adrenal Gland.

The Silver Medal to Lester R. Dragstedt, Paul V. Harper, Edward R. Woodward, E. Bruce Tovee and Augustin Rodolfo, University of Chicago Medical School, Chicago, for the exhibit on Gastric Vagotomy in the Treatment of Peptic Ulcer.

The Bronze Medal to Carl F. Jordan and I. H. Borts, Iowa State Department of Health, Des Moines and Iowa City, for the exhibit on Brucellosis.

Certificates of Merit, Group II, are awarded to the following (alphabetically arranged):

Joseph S. Barr, John A. Reidy and James R. Lingley, Massachusetts General Hospital, Boston, and Edward Gall, Bethesda Hospital, Cincinnati, for the exhibit on The Control of Epiphysial Growth by Roentgen Irradiation.

Stuart W. Harrington, Howard K. Gray and O. Theron Clagett, Mayo Clinic, Rochester, Minn., for the exhibit on Surgical Treatment of Certain Intrathoracic Lesions.

Julius Lempert and Dorothy Wolff, Lempert Institute of Otology, New York, and Philip E. Meltzer and LeRoy Schall, Massachusetts Eye and Ear Infirmary, Boston, for the exhibit on the Surgical Treatment of Clinical Otosclerosis.

Albert D. Ruedemann and Otto Glasser, Cleveland Clinic, Cleveland, for the exhibit on the Use of Radium in Ophthalmology.

In addition, the following exhibits are deemed worthy of Honorable Mention (alphabetically arranged):

That of T. J. Dry, J. E. Edwards, R. L. Parker, H. B. Burchell and H. M. Rogers, Mayo Clinic, Rochester, Minn., on Congenital Anomalies of the Heart and Great Vessels; Clinicopathologic Correlation.

That of E. L. MacQuiddy, University of Nebraska College of Medicine, Omaha, on Absorbable Powder Tissue Reactions and Physical Properties.

That of Benjamin T. Terry, Tacoma, Washington, on Razor Section Technic and the Polychroming of Methylene Blue.

That of J. Ross Veal, Georgetown University Medical School, Washington, D. C., on Hyperhidrosis—Surgical Management.

CERTIFICATE OF APPRECIATION

A Certificate of Appreciation is awarded to W. J. Kolff, Kampen, Holland, with special acknowledgment of the services rendered by T. G. Kroop and A. P. Fishman of Mount Sinai Hospital, New York, in the demonstration of the exhibit.

SUBSIDIZED EXHIBITS

The Committee on Awards commends highly the special exhibits on cardiovascular diseases, fractures, fresh pathologic material and physical medicine sponsored by the Board of Trustees of the American Medical Association. The Committee wishes to express its deep gratitude, a feeling shared with a whole generation of physicians, to Dr. Kellogg Speed, Chicago, for his twenty years of continuous untiring efforts to insure exceptional instructive fracture exhibits.

SPECIAL COMMENDATION

Special commendation is given to the historical exhibits presented by Paul E. Bechet, Elizabeth, N. J., on Synopsis of the More Important Achievements of American Dermatology; Ralph M. Waters, O. S. Orth, F. J. Pohle, Donald R. Kindschi and Lucien E. Morris, University of Wisconsin Medical School, Madison, on One Hundred Years of Chloroform, and A. H. Whittaker, Wayne University School of Occupational Health, Detroit, on the Historical Background of Occupational Diseases.

The Committee on Awards especially commends the exceptional exhibits sponsored by the Medical Department of the United States Army, the Bureau of Medicine and Surgery of the United States Navy, and the Veterans Administration, and extends the thanks of the medical profession for their wholehearted cooperation in continuing to present interesting exhibits at the Annual Meetings of the American Medical Association.

COMMENTS

The wholehearted support and active cooperation of the representatives from the seventeen sections of the Scientific Assembly have made the Centennial scientific exhibits worthy of such an event.

Special mention must be made of the excellent motion pictures which again demonstrate the increasing value of this relatively new innovation in visual education. The ones shown were carefully selected from a large number of worth while films submitted by many individuals. The large attendance at each theater attests the interest of the medical profession in this form of exhibit.

The exhibits sponsored by the American Medical Association showing the progress of medicine during one hundred years of its continued growth have proved of great interest.

The Committee on Awards again wishes to express its thanks and that of the thousands attending the Scientific Exhibit to Dr. Thomas G. Hull, Director, for his broad vision, unselfish devotion and tireless efforts in a truly Herculean task. His work has been crowned with signal success.

Respectfully submitted,

Max M. Peet, Ann Arbor, Chairman.
Arthur W. Allen, Boston.
Francis G. Blake, New Haven.
William P. Herbst, Washington, D. C.
Walter M. Simpson, Dayton, Ohio.

MINUTES OF THE SECTIONS

SECTION ON INTERNAL MEDICINE

Wednesday, June 11—Morning

The meeting was called to order at 9 o'clock by the chairman, Dr. Joseph T. Wearn, Cleveland.

Drs. A. Stone Freedburg, Herrman L. Blumgart, Paul M. Zoll and Monroe J. Schlesinger, Boston, presented a paper on "The Clinical Syndrome of Cardiac Pain Intermediate Between Angina Pectoris and Acute Myocardial Infarction, i. e. 'Coronary Failure'." Discussed by Drs. Arthur M. Master, New York; W. D. Stroud, Philadelphia; Robert L. Levy, New York; Joseph T. Wearn, Cleveland, and Herrman L. Blumgart, Boston.

Drs. George E. Burch and Clarence Thorpe Ray, New Orleans, presented a paper on "The Cardiovascular System as the Effector Organ in Psychosomatic Phenomena." Discussed by Drs. George A. Wolf Jr., New York; Mandel E. Cohen, Boston, and George E. Burch, Boston.

Dr. Ernest E. Irons, Chicago, read the Frank Billings Lecture, entitled "Frank Billings, Physician, Teacher and Citizen."

Dr. Richard H. Lyons, Syracuse, N. Y., read a paper on "Experiences with Tetraethylammonium Chloride in Hypertension." Discussed by Drs. K. G. Kohlstaedt, Indianapolis; Eugene Foldes, New York; Frederick M. Allen, New York, and Richard H. Lyons, Syracuse, N. Y.

Dr. Russell S. Boles, Philadelphia, read a paper entitled "An Appraisal of the Modern Medical and Surgical Methods of Treating Peptic Ulcer." Discussed by Drs. Walter L. Palmer, Chicago; Frank H. Lahey, Boston; A. F. R. Andresen, Brooklyn; Samuel Friedman, New York; Asher Winklestein, New York, and Russell S. Boles, Philadelphia.

Thursday, June 12—Morning

The following officers were elected: Chairman, C. J. Watson, Minneapolis; vice chairman, James A. Greene, Houston, Texas; secretary, Walter L. Palmer, Chicago; trustee at large to the Billings Lectureship Fund, N. C. Gilbert, Chicago; delegate, Burrell O. Raulston, Los Angeles; representative to the Scientific Exhibit, Thomas C. Garrett, Philadelphia; executive committee, William D. Stroud, Philadelphia; Joseph T. Wearn, Cleveland; C. J. Watson, Minneapolis.

Dr. A. B. Baker, Minneapolis, read a paper on "The Diagnosis and Treatment of Bulbar Poliomyelitis." Discussed by Drs. John R. Paul, New Haven, Conn.; Hart E. van Riper, New York, and A. B. Baker, Minneapolis.

Drs. Walsh McDermott, Carl Muschenheim and Susan J. Hadley, New York, presented a paper on "Streptomycin in the Treatment of Tuberculosis in Human Beings." Discussed by Drs. J. Burns Amberson, New York; John B. Barnwell, Washington, D. C., and Walsh McDermott, New York.

Dr. Joseph T. Wearn, Cleveland, read the chairman's address, entitled "The Challenge of Functional Disease."

Drs. John S. Hirschboeck, M. C. F. Lindert, Thomas L. Calvy and Jules Chase, Milwaukee, presented a paper on "The Effects of Ethyl Carbamate (Urethane) in the Treatment of Leukemia and Metastatic Malignant Tumors." Discussed by Drs. Claude E. Forkner, New York; Leon O. Jacobson, Chicago; Edwin E. Osgood, Portland, Ore.; William Dameshek, Boston, and John S. Hirschboeck, Milwaukee.

Dr. Leandro M. Tocantins, Philadelphia, read a paper on "The Mechanism and Management of the Hemorrhagic Tendency of Congestive Splenomegaly (Banti's Syndrome)." Discussed by Drs. William Dameshek, Boston, Cecil O. Patterson, Dallas, Texas; C. J. Watson, Minneapolis, and Leandro M. Tocantins, Philadelphia.

Dr. C. H. Slocumb, Rochester, Minn., read a paper on "Concentrated Vitamin D for Rheumatism: Toxic Reactions Simulating Hyperparathyroidism." Discussed by Drs. Richard H. Freyberg, New York; Smith Freeman, Chicago, and C. H. Slocumb, Rochester, Minn.

Friday, June 13—Morning

A joint meeting was held with the Section on Experimental Medicine and Therapeutics.

Dr. Hector Ducci Claro, Santiago, Chile, read the address of the invited foreign guest, on "The Contribution of the Laboratory to the Differential Diagnosis of Jaundice."

Dr. Reginald Fitz, Boston, read the Centennial Address, on the "History of the Specialty of Internal Medicine in the United States."

The following papers were read in a panel discussion on "Recent Advances in Treatment," Dr. Morris Fishbein, Chicago, acting as moderator:

Dr. Thomas M. Rivers, New York, "Virus Diseases."

Dr. Henry L. Bockus, Philadelphia, "Gastrointestinal Diseases."

Dr. Arlie R. Barnes, Rochester, Minn., "Cardiovascular Diseases."

Dr. C. P. Rhoads, New York, "Cancer."

Dr. Russell L. Haden, Cleveland, "Blood Diseases."

Dr. Chester S. Keefer, Boston, "Infectious Diseases."

Dr. James J. Waring, Denver, "Pulmonary Diseases."

Dr. Willard O. Thompson, Chicago, "Endocrinology."

SECTION ON SURGERY, GENERAL AND ABDOMINAL

Wednesday, June 11—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Alton Ochsner, New Orleans.

Sir Heneage Ogilvie, London, England, read the address of the invited foreign guest, entitled "Gastric Surgery After One Hundred Years."

Dr. Alton Ochsner, New Orleans, read the chairman's address, entitled "Carcinoma of the Lung."

Dr. Richard H. Sweet, Boston, read a paper on "Transthoracic Resection of the Esophagus and Cardiac End of the Stomach for Carcinoma: An Analysis of the Postoperative Complications, Causes of Death and Late Results of Operation." Discussed by Drs. Dallas B. Phemister, Chicago; Morris Friedell, Chicago, and Richard H. Sweet, Boston.

Dr. Owen H. Wangensteen, Minneapolis, read a paper on "The Problem of Gastric Cancer." Discussed by Drs. George T. Pack, New York, and Waltman Walters, Rochester, Minn.

Dr. John M. Waugh, Rochester, Minn., read a paper on "Radical Resection of the Head and Total Pancreatectomy for Benign and Malignant Lesions of the Pancreas." Discussed by Drs. Allen O. Whipple, New York, and Richard B. Cattell, Boston.

Drs. Fred W. Rankin and Coleman C. Johnston, Lexington, Ky., presented a paper on "Surgical Management of Cancer of the Colon and Rectum." Discussed by Drs. Thomas E. Jones, Cleveland; Leland S. McKittrick, Boston, and Frank H. Lahey, Boston.

Thursday, June 11—Afternoon

The following officers were elected: chairman, Dr. B. N. Carter, Cincinnati; vice chairman, Dr. Warren H. Cole, Chicago; secretary, Dr. Michael E. DeBakey, New Orleans; executive committee, Drs. Daniel C. Elkin, Atlanta, Ga.; Alton Ochsner, New Orleans, and B. N. Carter, Cincinnati; delegate, Dr. Grover C. Penberthy, Detroit; alternate, Dr. I. A. Bigger, Richmond, Va.; representative to American Board of Plastic Surgery, Dr. Bradford Cannon, Boston.

Dr. Evarts A. Graham, St. Louis, read the Centennial Address, "A Century of American Surgery."

Dr. Sidney C. Madden, Atlanta, Ga., read a paper on "Protein Nitrogen Retention Following Injury." Discussed by Drs. William Parson, New Orleans, and Sidney C. Madden, Atlanta, Ga.

Dr. Paul R. Cannon, Chicago, read a paper on "The Problem of Amino Acid Utilization in the Surgical Patient." Discussed by Drs. Robert Elman, St. Louis, and Paul R. Cannon, Chicago.

Dr. Champ Lyons, New Orleans, read a paper on "Management of Protein Deficiency in Surgical Patients: Use of Whole Blood Transfusion." Discussed by Drs. Everett I. Evans, Richmond, Va., and Hyman S. Mayerson, New Orleans.

Dr. John D. Stewart, Buffalo, read a paper on "Management of Protein Deficiency in Surgical Patients: Use of Intravenous and Intrajejunal Injections." Discussed by Drs. I. S. Ravdin, Philadelphia, and Robert Elman, St. Louis.

Dr. Richard L. Varco, Minneapolis, read a paper on "Nutritional Problems of Substandard Risk Patients." Discussed by Drs. Donald D. Kozoll, Chicago, and Michael G. Wohl, Philadelphia.

FRIDAY, JUNE 13—AFTERNOON

A joint meeting was held with the Section on Gastro-Enterology and Proctology.

The following papers were read in a symposium on "Peptic Ulcer":

Dr. Maurice Feldman, Baltimore: "Statistical Study of Over 1,000 Cases of Peptic Ulcer."

Drs. Henry A. Rafsky, Michael Weingarten and Charles I. Krieger, New York: "Onset of Peptic Ulcer in the Aged."

Dr. Ervin Levin, Chicago: "Nocturnal Gastric Secretion in Normal Individuals and in Peptic Ulcer."

Drs. H. M. Pollard and William Bachrach, Ann Arbor, Mich.: "Therapeutic Agents: Effect of Enterogastrone in Patient with Gastric and Duodenal Ulcer."

Dr. Leo L. Hardt, Chicago: "Therapeutic Agents: Aluminum Hydroxide Mixture with Mucin in the Treatment of Peptic Ulcer."

Drs. Manfred Kraemer and Leo H. Siegel, Newark, N. J.: "Synthetic Resin: A New Antacid for Treatment in Peptic Ulcer."

Drs. Waltman Walters, Harold A. Neibling, William F. Bradley, John T. Small and James W. Wilson, Rochester, Minn.: "Favorable and Unfavorable Results of Vagus Nerve Resections in the Treatment of Peptic Ulcer: An Anatomic, Physiologic and Clinical Study."

Drs. Samuel F. Marshall, Boston, and Mark L. Welch, Dallas, Texas: "Results of Surgical Treatment for Gastric Ulcer."

Dr. Harold Lincoln Thompson, Los Angeles: "Complications of Peptic Ulcer."

These nine papers were discussed by Drs. Lester R. Dragstedt, Chicago; Sara M. Jordan, Boston; Ralph Colp, New York; Walter L. Palmer, Chicago; Asher Winkelstein, New York; H. B. Stone, Baltimore; M. O. Grossman, Chicago; H. C. Saltzstein, Detroit; Otto De Muth, Vancouver, Canada; Russell S. Boles, Philadelphia; Richard Lewisohn, New York; Mildred Pfeiffer, Philadelphia; Hyman I. Goldstein, Camden, N. J.; David J. Sandweiss, Detroit; A. F. R. Andresen, Brooklyn; Manfred Kraemer, Newark, N. J., and Waltman Walters, Rochester, Minn.

SECTION ON OBSTETRICS AND GYNECOLOGY

WEDNESDAY, JUNE 11—MORNING

The meeting was called to order at 9:10 by the chairman, Dr. Alice F. Maxwell, San Francisco.

Dr. E. A. Schumann, Philadelphia, read the Centennial Address.

Dr. J. Ernest Ayre, Montreal, Canada, read a paper on "Cervical Cytology in the Diagnosis of Early Cancer." Discussed by Drs. Charles E. Galloway, Evanston, Ill.; Arthur Wilson Footer, Oakland, Calif.; Karl H. Martzloff, Portland, Ore.; James Heyman, Stockholm, Sweden; A. E. Rakoff, Philadelphia; Mrs. R. M. Graham, Boston, and J. Ernest Ayre.

Dr. W. D. Beacham, New Orleans, read a paper on "Ectopic Pregnancy." Discussed by Drs. T. J. Williams, University Va.; Charles A. Behney, Philadelphia; Chester M. Echols, Milwaukee; Irving F. Stein, Chicago, and B. Bernard Weinstein, New Orleans.

The following papers were read in a panel discussion on "Gynecologic Bleeding," Dr. A. H. Curtis, Chicago, acting as moderator:

Dr. S. R. M. Reynolds, Baltimore: "Physiologic Basis of Menstruation: A Summary of Current Concepts."

Dr. C. F. Fluhmann, San Francisco: "Menometrorrhagia During Adolescence."

Dr. A. H. Curtis, Chicago: "Functional Bleeding."

Dr. J. P. Pratt, Detroit: "Bleeding Associated with the Menopause."

In the question and answer period Dr. Emil Novak, Baltimore, participated.

THURSDAY, JUNE 11—MORNING

The following officers were elected: chairman, Dr. W. F. Mengert, Dallas, Texas; vice chairman, Dr. R. L. Faulkner, Cleveland; secretary, Dr. Arthur B. Hunt, Rochester, Minn.; executive committee, Drs. P. F. Williams, Philadelphia; Alice F. Maxwell, San Francisco; William F. Mengert, Dallas, Texas; delegate, Dr. Jean Paul Pratt, Detroit; alternate, Dr. Harvey B. Matthews, Brooklyn; delegate to International Congress on Obstetrics and Gynecology in conjunction with Bicentenary of Rotund Hospital, Dublin, Dr. Harvey B. Matthews, Brooklyn.

Dr. Alice F. Maxwell, San Francisco, read the chairman's address, entitled "A Medical Inventory."

Dr. Arthur Grollman, Dallas, Texas, read a paper on "Effect of Pregnancy on Experimental Renal Hypertension." Discussed by Drs. Frank P. Light, Brooklyn; George E. Wakerlin, Chicago, and Arthur Grollman, Dallas, Texas.

Dr. V. S. Counseller, Rochester, Minn., read a paper on "Congenital Absence of the Vagina and Its Surgical Management." Discussed by Drs. F. H. Falls, Chicago; Leo Brady, Baltimore; J. L. Bubis, Cleveland; Arthur H. Curtis, Chicago, and V. S. Counseller, Rochester, Minn.

The following papers were read in a panel discussion on "Modern Indications for Therapeutic Abortion," in which Dr. S. A. Cosgrove, Jersey City, N. J., acted as moderator.

Dr. H. M. Korns, Dubuque, Iowa: "Therapeutic Abortion from the Standpoint of the Internist."

Dr. S. C. Harvey, New Haven, Conn.: "Surgical Indications for Therapeutic Abortion."

Drs. F. G. Ebaugh and Keith D. Heuser, Denver: "Therapeutic Abortion from the Standpoint of the Neuropsychiatrist."

Dr. S. A. Cosgrove, Jersey City, N. J.: "Summary."

FRIDAY, JUNE 13—MORNING

Dr. James Heyman, Stockholm, Sweden, read the address of the invited foreign guest, entitled "Comparability of Material in Evaluating Results of Radiotherapy of Cancer of the Uterine Cervix."

Dr. José Rabago, Mexico City, read a paper on "Cesarean Section at General Hospital of Mexico City.

Dr. William J. Dieckmann, Chicago, read a paper on "Cesarean Hysterectomy." Discussed by Drs. Arthur B. Hunt, Rochester, Minn.; S. A. Cosgrove, Jersey City, N. J.; James F. Norton, Jersey City, N. J.; William F. Mengert, Dallas, Texas, and William J. Dieckmann, Chicago.

The following papers were read in a panel discussion on "Problems of Delivery," Dr. Philip F. Williams, Philadelphia, acting as moderator.

Dr. H. Hudnall Ware Jr., Richmond, Va.: "Unusual and Abnormal Presentations as a Delivery Problem."

Dr. Wiliam F. Windle, Seattle: "Fetal Problems Associated with Delivery."

Dr. C. A. Gordon, Brooklyn: "Hemorrhage as a Delivery Complication."

Dr. Philip F. Williams, Philadelphia: Summary.

SECTION ON OPHTHALMOLOGY

WEDNESDAY, JUNE 11—AFTERNOON

The meeting was called to order at 2:05 by the chairman, Dr. Derrick Vail, Chicago.

Dr. Derrick Vail, Chicago, read the chairman's address.

Surgeon General C. A. Swanson read an address.

Sir Stewart Duke-Elder, London, England, invited foreign guest, read his address, entitled "The Nature of the Aqueous Humor."

Dr. Frederick H. Verhoeff, Boston, read the centennial address, entitled "One Hundred Years of Progress in American Ophthalmology."

Drs. Harold G. Scheie, Philadelphia, Alan S. Crandall, Salt Lake City, and Werner Henle, Philadelphia, presented a paper on "Keratitis Associated with Lymphogranuloma Venereum." Discussed by Drs. John P. Macnie, New York; Garrett L. Sullivan, Boston, and Harold G. Scheie, Philadelphia.

Drs. Peter C. Kronfeld, Chicago, and Isabelle McGarry, Evanston, Ill., presented a paper on "A Five Year Follow-Up of 300 Glaucomatous Eyes." Discussed by Drs. Algernon B. Reese, New York; M. Elliott Randolph, Baltimore, Louis Lehrfeld, Philadelphia; Thomas D. Allen, Chicago, and Peter C. Kronfeld, Chicago.

Thursday, June 12—Afternoon

Dr. Thomas D. Allen, Chicago, read the report of the American Committee on Optics and Visual Physiology. It was voted that the report be received and placed on file.

Dr. Algernon B. Reese, New York, read the report on Awarding the Knapp Medal. It was voted that the report be received and placed on file.

Dr. Phillips Thygeson, San Jose, Calif., read the report of the American Board of Ophthalmology. It was voted that the report be received and placed on file.

The Secretary read the report on the Registry of Ophthalmic Pathology to May 1, 1947. It was voted that the report be accepted and filed.

Dr. Georgiana Dvorak Theobald, Oak Park, Ill., read the report of the Committee on Scientific Exhibit. It was voted that the report be accepted and placed on file.

Dr. Burton Chance, Philadelphia, read the report of the Committee on "Museum of Ophthalmic History." It was voted that the report be accepted and filed.

Dr. Truman L. Boyes, New York, read the report of the American Orthoptic Council. It was voted that the report be accepted and placed on file.

Dr. William L. Benedict, Rochester, Minn., read the report of the Advisory Committee to the Eye Health Committee of the American Student Health Association. It was voted that the report be accepted and filed.

Dr. M. Hayward Post, St. Louis, read the report of the representative of the section to the American College of Surgeons. It was voted that the report be accepted and placed on file.

Dr. Derrick Vail, Chicago, read the report of the Joint Committee of Occupational Ophthalmology. It was voted that the report be accepted and placed on file.

Dr. Parker Heath, Detroit, read the report of the Knapp Testimonial Fund. It was voted that the report be accepted and placed on file.

Dr. Arthur J. Bedell, Albany, N. Y., read his report as delegate to the House of Delegates. It was voted that the report be accepted and filed.

Dr. Conrad Berens, New York, read the report of the executive committee. It was voted that the report be accepted.

The following members were elected to membership on the Committee on Awarding the Knapp Medal. Dr. Fred Davis, Dr. Burton Chance and Dr. S. Judd Beach.

Dr. Louis Lehrfeld, Philadelphia, read the following resolution:

Whereas, A committee of the Philadelphia County Medical Society, consisting of ophthalmologists, obstetricians and bacteriologists, known as a committee to study the efficacy of silver nitrate in the prevention of ophthalmia neonatorum, has definitely gone on record to the effect that silver nitrate has little or no value in the prevention of ophthalmia neonatorum, and

Whereas, Silver nitrate as introduced by Credé in 1884 to prevent ophthalmia neonatorum has outlived its usefulness as compared with the newer antibiotics; and

Whereas, Ophthalmia neonatorum has not been completely eliminated, despite the use of silver nitrate; and

Whereas, Silver nitrate in 1 per cent and 2 per cent solutions may, at times, cause damage to the eyes of the newborn; and

Whereas, The expectant mother who has gonorrhea may be cured by penicillin and other antibiotics; and

Whereas, Forty or more states in the United States now require the use of silver nitrate in the eyes of the newborn despite the fact that the newer antibiotics are specifics against the gonococcus, therefore, be it

Resolved, That the President of the American Medical Association appoint a committee of ophthalmologists, obstetricians and bacteriologists to be known as a "Committee to Revaluate the Use of Silver Nitrate Compared with the New Antibiotics in the Prevention of Ophthalmia Neonatorum" with the express purposes:

1. To eliminate the use of silver nitrate and substitute suitable antibiotics
2. With the view of urging a change in state laws compelling the use of silver nitrate which we now know has little or no value in the prevention of ophthalmia neonatorum; and be it further

Resolved, That such committee cooperate with the present committee of the Philadelphia County Medical Society, which has undertaken a local study of this matter, with the view of having its findings effective on a national and international scale; and be it further

Resolved, That finances to conduct experiments on "Silver Nitrate versus Antibiotics in the Prevention of Ophthalmia Neonatorum" be sought from governmental agencies on research, from governmental agencies dealing with the prevention of venereal disease, and from private agencies interested in the prevention of blindness

It was voted that the resolution be referred to the executive committee for further study and reported back to the section at the next meeting.

A motion was made by Dr. Warren D. Horner, San Francisco, and duly seconded, that the section rescind the various resolutions regarding its attitude toward optometrists in the interest of prevention of blindness and of eye health. After discussion, the motion was put to a vote and defeated.

The following officers were elected: chairman, Dr. Everett L. Goar, Houston, Texas; vice chairman, Dr. Francis Heed Adler, Philadelphia; secretary, Dr. Trygve Gundersen, Boston; delegate, Dr. Arthur J. Bedell, Albany, N. Y.; alternate, Dr. S. Judd Beach, Portland, Maine; executive committee, Dr. Frederick C. Cordes, San Francisco; Dr. Derrick Vail, Chicago, and Dr. Everett L. Goar, Houston, Texas.

Dr. Walter H. Fink, Minneapolis, read a paper on "The Significance of the Ligament of Lockwood in Relation to Surgery of the Inferior Oblique Muscle." Discussed by Drs. Maynard C. Wheeler, New York; Harold F. Falls, Ann Arbor, Mich., and Walter H. Fink, Minneapolis.

Drs. John G. Bellows and Chester J. Farmer, Chicago, presented a paper on "Streptomycin in Ocular Infections." Discussed by Drs. Parker Heath, Detroit; Irving H. Leopold, Philadelphia, and John G. Bellows, Chicago.

Dr. Walter L. Bruetsch, Indianapolis, read a paper on "Unilateral Syphilitic Optic Atrophy." Discussed by Drs. Cecil S. O'Brien, Iowa City; Joseph V. Klauder, Philadelphia, and Walter L. Bruetsch, Indianapolis.

Dr. Leo L. Mayer, St. Louis, read a paper on "Sodium Sulfacetimide 30 per Cent in Ophthalmology." Discussed by Drs. Phillips Thygeson, San Jose, Calif.; Eugene W. Anthony, Fulton, N. Y., and Leo L. Mayer, St. Louis.

Dr. Adolph Posner, New York, presented a tonometer and an attachment to a tangent screen.

Dr. Louis Lehrfeld, Philadelphia, presented an operating head loupe.

Friday, June 13—Afternoon

Drs. Edwin L. Kendig Jr. and DuPont Guerry III, Richmond, Va., presented a paper on "Congenital Impatency of the Nasolacrimal Duct." Discussed by Drs. J. V. Cassady, South Bend, Ind.; John H. Dunnington, New York; Professor Arganaraz, Argentina; Everett L. Goar, Houston, Texas; Edwin L. Kendig Jr., Richmond, Va., and DuPont Guerry III, Richmond, Va.

Dr. George M. Haik, New Orleans, read a paper on "Intraocular Foreign Bodies: Wartime Experiences Applied to a Peacetime Problem." Discussed by Drs. John S. McGavic, Bryn Mawr, Pa , Frank W Newell, Chicago, and George M Haik, New Orleans

Dr Don Marshall, Kalamazoo, Mich , read a paper on "Military Ophthalmology in the European Theater" Discussed by Drs F Phinizy Calhoun Jr , Atlanta, Ga , Trygve Gundersen, Boston, and Don Marshall, Kalamazoo, Mich

Dr S M. Dupertuis, Pittsburgh, read a paper on "Eyelid Reconstruction in the Blinded" Discussed by Drs Norman L Cutler, *Wilmington, Del , Frank McDowell, St Louis, and* S. M. Dupertuis, Pittsburgh.

Drs William C Owens, Baltimore, and William F Hughes Jr , Indianapolis, presented a paper on "Surgical Treatment of Congenital Cataract" Discussed by Drs Frederick C Cordes, San Francisco, and William C Owens, Baltimore

Dr Derrick Vail, the chairman, expressed his thanks to the medical ophthalmic officers who served under him in Europe for their faithful, loyal and excellent service

SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

Wednesday, June 11—Morning

The meeting was called to order at 9 05 by the chairman Dr J Mackenzie Brown, Los Angeles

Dr Louis H Clerf, Philadelphia read a paper on 'Progress in Bronchology" Discussed by Drs H B Orton Newark N J , H J Moersch Rochester, Minn , Eelco Huizinga Holland, Andre Soulas, Paris, France, Irving Wilson Voorhees, New York and Louis H Clerf, Philadelphia

Dr Paul H Holinger, Chicago read a paper on "Progress n Esophagology' Discussed by Drs Fletcher D Woodward, Charlottesville Va , E G Gill, Roanoke, Va, and Paul H Holinger, Chicago

Dr Mercer G Lynch, New Orleans read a paper on "Traumatic Injuries of the Larynx, Especially Gunshot Wounds and Their Repair' Discussed by Drs Joseph Buchignani Memphis Tenn , J Wade Youngblood, Dallas, Texas, G E Martin, Edinburgh, Scotland H B Orton, Newark, N J , E G Gill, Roanoke Va , and Mercer G Lynch, New Orleans

Dr Fred Z Havens Rochester, Minn read a paper on Some Technical Procedures in the Treatment of the Cleft Lip nd Palate' Discussed by Drs Harold S Vaughan New York; Robert H Ivy, Philadelphia, George M Dorrance, Philadelphia, Irving Wilson Voorhees, New York, and Fred Z Havens, Rochester, Minn

Dr LeRoy A Schall, Boston, read a paper on 'Malignant Growths of the Nose and Nasal Sinuses" Discussed by Drs Henry B Orton, Newark N J C Stewart Nash, Rochester, N Y , G E Martin, Edinburgh, Scotland, Fred Z Havens, Rochester, Minn and LeRoy A Schall, Boston

Dr A C Furstenberg, Ann Arbor, Mich , read a paper on "Diseases of the Salivary Glands" Discussed by Drs LeRoy A Schall, Boston, James Milton Robb, Detroit, and A C Furstenberg, Ann Arbor, Mich

Dr Murdock Equen, Atlanta, Ga , read a case report entitled "Nail in Duodenum Removed by Magnet"

Dr Gabriel Tucker, Philadelphia, presented a set of instruments for children, and a flexible magnet

Thursday, June 12—Morning

Dr Norton Canfield, New Haven, Conn , made the following recommendation

1. Send the enclosed letter to each member of the Section on Laryngology, Otology and Rhinology of the A M A who served in the armed forces of World War I or World War II

2 Have the secretary of the section summarize the replies and present them to the next meeting of the council for discussion and formulation of further action to be taken at the next meeting of the society.

3 Motion by Dr Carl McCaskey, Indianapolis, seconded by Dr J M. Robb, that Dr Canfield send the following letter and summarize the replies for submission to the council

Dr Canfield was given *authority to send the following letter*

Dear Dr ———

As an otolaryngologist presumably interested in the status of the specialty in programs of federal medicine, such as the Army, Navy and Veterans Administration, will you kindly set forth your views as to the policy which you wish the Section on Laryngology, Otology and Rhinology of the A M A to pursue in regard to organization of the specialty in any existing or future program in which there will be need for special professional services from our members Your reply will be a part of a summary to be presented to the council of the section for discussion and formulation of a policy which will be brought before the next annual meeting of the section

Your officers consider this *request urgent* and *it would* help their activities if we could have your reply by Aug 1 1947 Now is the time for action if we are to be properly represented at the policy making level where professional direction is formulated for the care of patients who require otolaryngologic care in federal medicine programs of the future

The following officers were elected chairman, Dr Fletcher D Woodward, Charlottesville, Va , vice chairman, Dr John R Simpson, Pittsburgh, secretary, Dr J M Robb, Detroit, delegate, Dr Burt R Shurly, Detroit alternate, Dr Gordon Harkness Davenport, Iowa, executive committee Louis H Clerf, Philadelphia, J Mackenzie Brown, Los Angeles, and Fletcher D Woodward Charlottesville, Va , representative to Committee on Scientific Exhibit, James B Costen St Louis, representative to board of governors of the American College of Surgeons, James H Maxwell, Ann Arbor Mich

Dr J Mackenzie Brown Los Angeles, read the chairman s address

Dr G Ewart Martin Edinburgh Scotland invited foreign guest, read his address entitled The Present Position of Bronchoesophagology in Great Britain '

Dr Ralph A Fenton Portland, Ore read the centennial address entitled ' A Brief History of Otolaryngology in the United States, 1847 1947"

Dr Carl H McCaskey, Indianapolis, read a paper on "Neck Surgery in Otolaryngology" Discussed by Drs August L Beck, New Rochelle, N Y , Joseph D Kelly, New York, Benjamin Shuster, Philadelphia, Hayes E Martin, New York, and Carl H McCaskey, Indianapolis

Dr Oscar V Batson Philadelphia read a paper on 'Lymphatics of the Head and Neck" Discussed by Dr Hayes E Martin, New York

Friday, June 13—Morning

Dr Thomas G Tickle, New York read a paper on "Surgery of the Seventh Nerve" Discussed by Drs Frank D Lathrop, Boston, Joseph A Sullivan, Toronto, Canada, and Thomas G Tickle, New York

Dr Julius Lempert, New York read a paper on 'The Lempert Fenestra Nov-Ovalis Operation for the Restoration of Practical and Serviceable Unaided Hearing ' Discussed by Drs Marvin F Jones New York, Philip E Meltzer, Boston, Joseph A Sullivan, Toronto, Canada, Arthur L Juers, Chicago, Maurice Saltzman, Philadelphia, Howard House, Los Angeles, and Julius Lempert, New York

Dr Burt R Shurly, Detroit, gave his report as delegate to the House of Delegates, stating there had been established a new Section on Chest Diseases and that the delegate from that section would increase the number in the House of Delegates to 177 He reported that the House of Delegates passed a resolution to request that a new division of the teaching of nursing be made, in that practical nurses should be offered a two years training so that they would be called certificated nurses

Papers were read by the following authors in a panel discussion on "What Can You Do for the Hard of Hearing?" Dr. Francis L Lederer, Chicago, acted as moderator

Dr Harold Westlake, Northwestern University, Chicago; Miss Eva Thompson and Miss Miriam Pauls, U S Naval Hospital, Philadelphia, Professor Herbert Koepp-Baker, Chicago, Col Edward H Truex, Hartford, Conn , and Dr Charles E Kinney, Cleveland

SECTION ON PEDIATRICS

Thursday, June 11—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Gilbert J. Levy, Memphis, Tenn.

Drs. Robert A. Hingson and Frank E. Whitacre, Memphis, Tenn., Waldo B. Edwards, New York, and Clifford B. Lull, Philadelphia, presented a paper entitled "An Analysis of Newborn Mortality and Morbidity as Influenced by Continuous Caudal Analgesia with Controls in New York, Philadelphia and Memphis." Discussed by Drs. James G. Hughes, Memphis, Tenn.; Joseph B. Sheffery, Washington, D. C., Russel Wilbur Alles, Detroit; Harold W. Adams, Somersworth, N. H., and Robert A. Hingson, Memphis, Tenn.

Drs. Jerome L. Kohn and Alfred E. Fischer, New York, presented a paper on "Management of Whooping Cough in Infants." Discussed by Drs. Ruth G. Aleman, New Orleans; L. Nellis Silverthorne, Toronto, Canada, and Alfred E. Fischer, New York.

Drs. Abraham M. Litvak and Harry Gabel, Brooklyn, presented a paper on "Cerebral Complications in Pertussis." Discussed by Drs. Philip Rosenblatt, Brooklyn; Benjamin Kramer, Brooklyn, and Abraham M. Litvak, Brooklyn.

Drs. J. Victor Greenebaum and Louis A. Lurie, Cincinnati, presented a paper on "Encephalitis as a Causative Factor in Behavior Disorders in Children." Discussed by Drs. Charles Bradley, East Providence, R. I., and Louis A. Lurie, Cincinnati.

Drs. Alton Goldbloom, Herbert H. Jasper and Helen Friedman Brickman, Montreal, Canada, presented a paper on "Electroencephalographic Studies in Acute Poliomyelitis." Discussed by Drs. M. G. Peterman, Milwaukee; David Bodian, Baltimore; John A. Toomey, Cleveland; Meyer A. Perlstein, Chicago, and Alton Goldbloom, Montreal, Canada.

Drs. Preston A. McLendon and Dorothy S. Jaeger-Lee, Washington, D. C., presented a paper on "The Role of Cow's Milk in Gastrointestinal Allergy of Children." Discussed by Drs. W. Ambrose McGee, Richmond, Va., William F. Matthews, Montclair, N. J.; Newell Jones, Hollywood, Calif.; George Piness, Los Angeles, and Preston A. McLendon, Washington, D. C.

Thursday, June 12—Afternoon

The following officers were elected: chairman, Oscar Reiss, Los Angeles; vice chairman, Stanley Gibson, Chicago; secretary, Margaret Mary Nicholson, Washington, D. C.; representative to Scientific Exhibit, Albert V. Stoesser, Minneapolis; executive committee, John Aikman, Rochester, N. Y.; Gilbert J. Levy, Memphis, Tenn.; Oscar Reiss, Los Angeles.

Dr. Hugh L. Dwyer, Kansas City, Mo., read a report in behalf of the trustees of the Jacobi Memorial Fund. On motion by Dr. Dwyer, duly seconded, it was unanimously voted to appropriate $1,500 of this fund toward the expenses of the International Congress of Pediatrics meeting to be held in New York in July.

Drs. Weston M. Kelsey and George T. Harrell Jr., Winston-Salem, N. C., presented a paper on "Management of Tick Typhus (Rocky Mountain Spotted Fever) in Childhood." Discussed by Drs. David M. Greeley, New York; Charles Armstrong, Washington, D. C., and Weston M. Kelsey, Winston-Salem, N. C.

Dr. Robert Debré, Paris, France, read the address of the invited foreign guest, entitled "Deleterious Results of Overdosage of Vitamin D_2 During Infancy."

Dr. Cameron Haight, Ann Arbor, Mich., read a paper on "Congenital Atresia of the Esophagus with Tracheoesophageal Fistula." Discussed by Drs. Brian B. Blades, Washington, D. C.; Arthur B. McGraw, Detroit, and Cameron Haight, Ann Arbor, Mich.

Dr. Dorothy Donley-Dowd, Washington, D. C., read a paper on "Psychotherapy and the Pediatrician." Discussed by Drs. Earl H. Baxter, Columbus, Ohio; Manfred S. Guttmacher, Baltimore; Winfred Overholser, Washington, D. C., and Dorothy Donley-Dowd, Washington, D. C.

Drs. Ralph V. Platou, John Kometani and Norman Woody, New Orleans, presented a paper on "Pediatric Deaths in a Large General Hospital." Discussed by Drs. Edwin Adams Harper, Lynchburg, Va.; John M. Higgins, Sayre, Pa., and Ralph V. Platou, New Orleans.

Friday, June 13—Afternoon

Drs. Robert H. High, Earl H. Spaulding and Amedeo Bondi Jr., Philadelphia, presented a paper entitled "Clinical Application of a Laboratory Method for the Selection of Antibiotic Therapy." Discussed by Drs. Albert J. Bruecken, Pittsburgh; Horace L. Hodes, Baltimore, and Robert H. High, Philadelphia.

Dr. Hugh Leslie Moore, Dallas, Texas, presented a resolution of thanks to the pediatricians of Atlantic City, N. J., for their untiring efforts in perfecting complete arrangements for the meeting of the Section on Pediatrics.

Drs. Lewis A. Koch, Charles A. Weymuller and Elizabeth James, Brooklyn, presented a paper on "Some Practical Measures for the Reduction of Mortality from Premature Birth." Discussed by Drs. Charles C. Chapple, Philadelphia, and Lewis A. Koch, Brooklyn.

Dr. William Weston Jr., Columbia, S. C., read a paper on "Rheumatic Fever in Childhood." Discussed by Drs. Ira Gore, Washington, D. C.; Stanley Gibson, Chicago; Rachel Ash, Philadelphia; Mark P. Schultz, Bethesda, Md., and William Weston Jr., Columbia, S. C.

Drs. Harriet Davis and Joseph Stokes Jr., Philadelphia; John F. Enders, Boston, and Gertrude Henle and Elizabeth P. Maris, Philadelphia, presented a paper on "Immunologic Studies in Mumps." Discussed by Drs. Karl Habel, Bethesda, Md.; Thomas B. Turner, Baltimore, and Joseph Stokes Jr., Philadelphia.

Drs. Wallace Kernodle, Grant Taylor and Wilburt C. Davison, Durham, N. C., presented a paper on "Lye Poisoning in Children." Discussed by Drs. John Aikman, Rochester, N. Y.; Richard R. O'Toole, Pittsburgh, and Wallace Kernodle, Durham, N. C.

SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

Wednesday, June 11—Afternoon

The meeting was called to order at 2:05 by the chairman, Dr. Carl A. Dragstedt, Chicago.

Dr. Roger I. Lee, Boston, read the Centennial Address, entitled "The 1947 Flowering of the American Century Plant of Therapeutics."

The following papers were read in a symposium on "The Use of Newer Drugs":

Drs. Robert A. Woodbury, George P. Child, G. Frank Jones Jr. and Richard Torpin, Augusta, Ga.: "Asymatrine Hydrobromide in the Treatment of Gastroenteric Hypermotility." Discussed by Drs. Addison W. Simpson Jr., Washington, Ga., and Benedict E. Abreu, San Francisco.

Dr. Leon O. Jacobson, Chicago: "The Use of Nitrogen Mustards in the Treatment of Disease." Discussed by Drs. Alfred Gellhorn, New York; C. C. Sturgis, Ann Arbor, Mich.; William Dameshek, Boston; Perk Lee Davis, Philadelphia, and Leon O. Jacobson, Chicago.

Dr. Isidore Snapper, New York: "Stilbamidine in the Treatment of Multiple Myeloma." Discussed by Dr. William Dameshek, Boston.

Drs. John Luetscher and Warfield T. Longcope, Baltimore: "BAL Therapy in Arsenic and Mercury Poisoning." Discussed by Drs. Marion B. Sulzberger, New York; Harry Gold, New York, and John Luetscher, Baltimore.

Dr. Francis M. Rackemann, Boston: "Use of Antihistaminic Drugs." Discussed by Drs. Franklin A. Kyser, Evanston, Ill.; Richard A. Kern, Philadelphia; Marion B. Sulzberger, New York, and Francis M. Rackemann, Boston.

Thursday, June 12—Afternoon

The following officers were elected: chairman, Walter Bauer, Boston; vice chairman, Dwight L. Wilbur, San Francisco;

secretary, Carl V Moore, St Louis, executive committee E V Allen, Rochester, Minn, Carl A Dragstedt, Chicago, and Walter Bauer, Boston, delegate, E V Allen, Rochester, Minn, alternate, C M Gruber, Philadelphia, representative to Scientific Exhibit, Robert W Wilkins, Boston

Dr Corneille Heymans, Ghent, Belgium, read the address of the invited foreign guest, on "Blood Pressure Homeostasis and Circulatory Failure"

Dr Carl A Dragstedt, Chicago read the chairman's address, entitled "Idiosyncrasy to Drugs"

Drs Robert L Levy, James A L Mathers, Alex A Mueller and John L Nickerson, New York, presented a paper entitled "Effects of Smoking Cigarets on the Heart in Normal Persons and in Cardiac Patients Discussed by Drs Arlie R Barnes, Rochester Minn, David Adlersberg New York H S Connamacher, Newark N J, Herbert F Robb, Belleville Mich, and Robert L Levy, New York

Drs Irving S Wright and William T Foley, New York, presented a paper on "The Role of Anticoagulants in the Treatment of Heart Disease" Discussed by Drs E V Allen Rochester, Minn Herrman L Blumgart Boston, Leo Loewe, Brooklyn, Benjamin Manchester, Washington, D C, F Sterling Nichol Miami Fla, and Irving S Wright New York

Drs Earle M Chapman Reginald H Smithwick Dora Kinsey and William P Chapman, Boston presented a paper entitled "Preliminary Observation of the Effect of Thoracic Sympathectomy on Heart Rate" Discussed by Drs Keith S Grimson, Durham, N C, Corneille Heymans, Ghent Belgium, and Earle M Chapman Boston

FRIDAY, JUNE 13—MORNING

A joint meeting was held with the Section on Internal Medicine The proceedings are reported in the minutes of that section

SECTION ON PATHOLOGY AND PHYSIOLOGY

WEDNESDAY JUNE 11—MORNING

The meeting was called to order at 9 10 by the chairman, Dr J J Moore Chicago

Dr G E Wakerlin, Chicago, read a paper on "The Present Status of the Therapy of Experimental Renal Hypertension" Discussed by Drs Arthur Grollman Dallas, Texas, Corneille Heymans, Ghent, Belgium, and G E Wakerlin Chicago

Dr R H Draeger, Washington, D C read a paper entitled "Medicine at the Crossroads" Discussed by Drs G E Wakerlin, Chicago, and R H Draeger, Washington, D C

Drs Walter L Bierring and Richard F Birge Des Moines, Iowa, presented a paper on "Tumors of the Carotid Gland"

Dr J J Moore, Chicago read the chairman's address, entitled "The Practice of Pathology"

A motion of appreciation to Dr Moore for services rendered the *section was carried by rising vote*

Dr Goran Liljestrand Stockholm Sweden read the address of the invited foreign guest, entitled "Regulation of the Arterial Pulmonary Pressure"

Dr Howard T Karsner, Cleveland read the Centennial Address, on "American Giants of Pathology"

Drs H J Corper and Maurice L Cohn, Denver, presented a paper on "Various Phases of the Use of Streptomycin in Tuberculosis" Discussed by Dr Emil Bogen, Olive View, Calif

THURSDAY, JUNE 12—MORNING

The following officers were elected chairman, Alvin G Foord, Pasadena, Calif, vice chairman, G E Wakerlin, Chicago, secretary, Edwin F Hirsch, Chicago, executive committee, Virgil H Moon, Philadelphia, J J Moore, Chicago, and Alvin G Foord, Pasadena, Calif, delegate, Swen L Larson, West Elmira, N Y, alternate, H J Corper, Denver, representative to Scientific Exhibit, F W Konzelmann, Absecon, N J

The following papers were presented as a symposium on "Virus Diseases"

Dr E W Schultz, Stanford University, Calif "The Present Status of Viruses and Virus Diseases"

Dr Joseph E Smadel, Washington, D C "The Physician and the Virus Diagnostic Laboratory"

Dr Ralph W G Wyckoff, Washington, D C: "The Electron Microscopy of Viruses"

Dr John H Dingle, Cleveland "Common Virus Infections of the Respiratory Tract"

Drs Thomas Francis Jr and Gordon C Brown, Ann Arbor, Mich "Search for Extrahuman Sources of Poliomyelitis Virus"

Dr John G Kidd, New York "Viruses and Virus-like Agents as Causes of Cancer"

These six papers were discussed by Drs R R Spencer, Washington, D C, James P Leake, Washington, D C, E W Schultz, Stanford University, Calif, and Joseph E Smadel, Washington, D C

FRIDAY, JUNE 13—MORNING

The following papers were read in a symposium on "The Present Status of Cancer Research"

Dr R R Spencer, Washington, D C. "The *Meaning* of Cancer Research"

Dr Henry S N Greene, New Haven, Conn "The Biologic Assessment of Tumor Potentialities" Discussed by Drs Stanley P Reimann Philadelphia, E V Cowdry, St Louis, R R Spencer, Washington, D C, Alvin G Foord, Pasadena, Calif, Robert S Stone, San Francisco, and Henry S N Greene, New Haven, Conn

Dr E V Cowdry, St Louis "Epidermal Carcinogenesis" Discussed by Drs R R Spencer, Washington, D C, M J. Shear, Washington, D C, and E V Cowdry, St Louis

Dr M J Shear, Washington, D C "Some Current Trends in Cancer Chemotherapy" Discussed by Drs Shields Warren, Boston, Stanley P Reimann, Philadelphia, E V Cowdry, St Louis, Robert S Stone, San Francisco, and M J Shear, Washington, D C

Dr Shields Warren, Boston "Radioactive Isotopes in the Diagnosis and Treatment of Malignant Disease" Discussed by Drs Robert S Stone, San Francisco, M J Shear, Washington, D C, and Shields Warren, Boston

SECTION ON NERVOUS AND MENTAL DISEASES

WEDNESDAY, JUNE 11—AFTERNOON

The meeting was called to order at 2 10 by the chairman, Dr Roland P Mackay, Chicago

Dr Wallace B Hamby, Buffalo, read a paper on "Spontaneous Subarachnoid Hemorrhage of Aneurysmal Origin, Factors Influencing Prognosis" Discussed by Drs J C Richardson, Toronto, Canada, I S Wechsler, New York, Rudolph Jaeger, Philadelphia, and Wallace B Hamby, Buffalo

Dr Thierry Alajouanine, Paris, France, read the address of the invited foreign guest, on "The History of Neurology and Its Present Day Applications"

Dr Pearce Bailey, Washington, D C, read a paper on "The Program for the Activation of Neurology Under the Veterans Administration" Discussed by Dr J M Nielsen, Los Angeles

Dr Joseph T Roberts, Washington, D C, read a paper on "Ischemia of Peripheral Nerves, Experimental and Clinical Studies on the Role of the Vasa Nervorum" Discussed by Drs Louis J Karnosh, Cleveland, Joseph L Fetterman Cleveland, Samuel B Hadden, Philadelphia, and Joseph T Roberts, Washington, D C

Dr. Walter G. Haynes, Birmingham, Ala., read a paper on the "Surgical Treatment of Intractable Unilateral Cephalalgia." Discussed by Drs. Paul Bucy, Chicago, Roland P. Mackay, Chicago, and Walter G. Haynes, Birmingham, Ala.

Drs. Michael Scott and Henry T. Wycis, Philadelphia, presented a paper entitled "A Survey of the Value of Neurosurgical Treatment for the Relief of Intractable Pain." Discussed by Drs. A. Earl Walker, Chicago, James L. Poppen, Boston; Ernest A. Spiegel, Philadelphia, James W. Watts, Washington, D. C., and Michael Scott, Philadelphia.

Thursday, June 12—Afternoon

Dr. Walter Freeman, Washington, D. C., submitted a report on the American Board of Psychiatry and Neurology.

Dr. Paul C. Bucy, Chicago, submitted a report on the American Board of Neurological Surgery.

The chairman, Dr. Roland P. Mackay, Chicago, submitted a report on the progress of the International Congress on Mental Health. On motion by Dr. Paul C. Bucy, Chicago, seconded by Dr. Walter Freeman, Washington, D. C., it was decided that two participants, with alternates, be appointed to attend the London meeting of the congress.

The following officers were elected: chairman, A. R. Vonderahe, Cincinnati; vice chairman, William A. Smith, Atlanta, Ga.; secretary, Frederick P. Moersch, Rochester, Minn., representative to Scientific Exhibit, A. B. Baker, Minneapolis; delegate, Hans Heinrich F. Reese, Madison, Wis.; alternate, Robert F. Gayle Jr., Richmond, Va., representative to the American Board of Psychiatry and Neurology, Percival Bailey, Chicago.

Dr. Stanley Cobb, Boston, read the Centennial Address, entitled "One Hundred Years of Progress in Neurology, Neurologic Surgery and Psychiatry."

Dr. R. Glen Spurling, Louisville, Ky., read a paper on "Neurosurgery (and the *Neurosurgeon) in World War II.*" Discussed by Dr. M. Barnes Woodhall, Durham, N. C.

Dr. Francis C. Grant, Philadelphia, read a paper entitled "Surgical Experience with Pituitary Tumors." Discussed by Drs. James L. Poppen, Boston; Edgar A. Kahn, Ann Arbor, Mich.; Max Peet, Ann Arbor, Mich., Oscar Hirsch, Boston, and Francis C. Grant, Philadelphia.

Friday, June 13—Afternoon

Dr. Roland P. Mackay, Chicago, read the chairman's address, entitled "The Neurologist Looks at Discipline."

Dr. Nolan D. C. Lewis, New York, read a paper entitled "Research Leads in Contemporary Neurochemistry." Discussed by Drs. Harold E. Himwich, Falston, Md., and J. M. Nielsen, Los Angeles.

Drs. Karl M. Bowman and Jurgen Ruesch, San Francisco, presented a paper on "Personality and Illness." Discussed by Drs. Samuel B. English, Glen Gardner, N. J., and Karl M. Bowman, San Francisco.

Dr. Benjamin McLane Spock, Rochester, Minn., read a paper on "Common Emotional Disturbances in the First Two Years of Life." Discussed by Drs. Karl M. Bowman, San Francisco; Frederick H. Allen, Philadelphia, and Benjamin McLane Spock, Rochester, Minn.

Drs. George N. Thompson and J. M. Nielsen, Los Angeles, presented a paper on "The Organic Paranoid Syndrome." Discussed by Dr. S. Bernard Wortis, New York.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

Wednesday, June 11—Afternoon

The meeting was called to order at 2:05 by the chairman, Dr. Nelson Paul Anderson, Los Angeles.

The chairman announced the appointment of Dr. George C. Andrews, New York, to the executive committee in the absence of Dr. Clark W. Finnerud, Chicago.

Dr. Francis W. Lynch, St. Paul, read the report on the Scientific Exhibit. Dr. Lynch suggested that the section thank Dr. Paul E. Bechet, Elizabeth, N. J., for the extensive effort put into the preparation of his exhibit. On motion by Dr. Clyde L. Cummer, Cleveland, seconded by Dr. John G. Downing, Boston, it was voted that Dr. Lynch's report be accepted.

Dr. C. Guy Lane, Boston, read the report of the Committee on Industrial Dermatoses, in the absence of Dr. H. F. Foerster, as follows:

> Three meetings of this committee have been held: (1) in Cleveland at the time of the meeting of the American Academy of Dermatology and Syphilology in December 1946, (2) at Murray Bay, Quebec, Canada, June 4, 1947, a joint meeting of the committee with the Advisory Dermatologic Committee of the U. S. Public Health Service, and (3) at Atlantic City, June 12, a joint meeting of this committee with the Advisory Dermatologic Committee of the U. S. Public Health Service.
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> An informal meeting was also held with representatives of the Council of Industrial Health on June 11.
>
> There was considerable discussion in regard to coordination of the work of the Council of Industrial Health and of the office of dermatology of the U. S. Public Health Service, and considerable progress was made with a view to closer cooperation.
>
> There was also considerable discussion on regional representations of the committee; teaching of occupational dermatoses in medical schools; a formulary for use in the management of occupational skin diseases, and the possible publication at intervals by the Council on Industrial Health of a bulletin of material submitted by the committee and of lists of cutaneous hazards in industry.
>
> Respectfully submitted,
>
> H. F. Foerster, Secretary.

On motion by Dr. Fred D. Weidman, Philadelphia, seconded by Dr. Clyde L. Cummer, Cleveland, it was voted that the report of the Committee on Industrial Dermatoses be accepted.

Dr. Earl Osborne, Buffalo, announced that a meeting of the American Academy of Dermatology and Syphilology was to be held in Chicago in December 1947.

Dr. George M. Lewis read the report of the American Board of Dermatology and Syphilology, which was accepted.

Dr. Paul A. O'Leary, Rochester, Minn., editor of the *Archives of Dermatology and Syphilology*, then gave an oral report on his activities as editor and asked for an expression of opinion as to whether the tenth International Congress should be held in 1950 in the United States and whether members were willing to contribute funds for such a congress.

It was voted, on motion by Dr. Harold N. Cole, Cleveland, seconded by Dr. Clyde L. Cummer, Cleveland, that the secretary be authorized to send a telegram to the oldest member in the United States, Dr. William T. Corlett of Cleveland.

Dr. Nelson Paul Anderson, Los Angeles, read the chairman's address, on "Cysts, Sinuses and Fistulas of Dermatologic Interest."

Dr. Oliver S. Ormsby, Chicago, read the Centennial Address, entitled "One Hundred Years' Progress in Dermatology."

R. M. B. MacKenna, London, England, read the address of the invited foreign guest, entitled "Dermatology: The International Outlook."

Dr. Henry E. Michelson, Minneapolis, read a paper on "Sarcoidosis: A Review and an Appraisal." Discussed by Drs. Fred D. Weidman, Philadelphia; Arthur C. Curtis, Ann Arbor, Mich., and Henry E. Michelson, Minneapolis.

Drs. Earl D. Osborne, James W. Jordan, Frank C. Hoak Jr. and Francis J. Pschierer, Buffalo, presented a paper on "Nitrogen Mustard Therapy in Cutaneous Blastomatous Disease." Discussed by Drs. Charles Spurr, Chicago; Leon Goldman, Cincinnati; Frank J. Eichenlaub, Washington, D. C.; Richard S. Weiss, St. Louis, and Earl D. Osborne, Buffalo.

Drs. David I. Macht and Marcus Ostro, Baltimore, presented a paper on "Pemphigus: Experimental and Clinical Studies on the Etiology, Diagnosis and Therapy."

Dr. Arthur W. Grace, Brooklyn, read a paper on "The Causative Agent of Pemphigus Vulgaris."

These two papers were discussed by Drs. Richard S. Weiss, St. Louis; Walter F. Lever, Boston; John G. Downing, Boston; Maurice Oppenheim, Chicago; Ashton L. Welsh, Cincinnati; David I. Macht, Baltimore, and Arthur W. Grace, Brooklyn.

Thursday, June 12—Afternoon

Dr Francis W Lynch, St Paul, announced the award of the silver medal to Drs G H Faget P T Erickson and Sister Hilary Ross, U S Marine Hospital, Carville, La, for the exhibit on *Chemotherapy of Leprosy*

He also announced that special commendation was given to the historical exhibits of Paul E Bechet, Elizabeth, N J, on "Synopsis of the More Important Achievements of American Dermatology"

The following officers were elected chairman, Henry E Michelson, Minneapolis, vice chairman, Carroll Wright, Philadelphia, secretary, Clinton W Lane, St Louis, representative to American Board of Dermatology and Syphilology, Paul A O'Leary, Rochester, Minn, delegate, C F Lehmann, San Antonio, Texas, alternate, Everett Fox, Dallas, Texas

On motion by Dr Clyde L Cummer, Cleveland duly seconded, it was voted that Dr Bechet be given an honorarium to help defray the expense of his exhibit, to be taken from the money in Dr Lynch's Scientific Exhibit fund, the amount to be left to Dr Lynch's discretion

Drs H S Kupperman, R B Greenblatt and R B Dienst, Augusta, Ga, presented a paper on 'Streptomycin in the Therapy of Granuloma Inguinale" Discussed by Drs Robert R Kierland, Rochester, Minn, Donald M Pillsbury, Philadelphia, Pa, Harold L Hirsh, Washington, D C, Harry M Robinson, Baltimore, and R B Greenblatt Augusta, Ga

Dr Paul A O'Leary, Rochester Minn read the Centennial Address, entitled "A Brief History of Syphilis During the Past Hundred Years"

Drs James K Howles, New Orleans, and Elmer R Gross, Philadelphia, presented a paper on Nonspecific Treatment of ermatoses and Adjunctive Therapy of Syphilis with Oral dium Bismuth Triglycollamate Discussed by Drs Dudley E Smith, Charlottesville Va, Arthur W Neilson St Louis, Harold N Cole, Cleveland Carroll S Wright, Philadelphia, Charles R Rein, New York, and E R Gross, Philadelphia

Dr Eugene A Hand, Saginaw Mich, read a paper on The Importance of Circumcision in the Prevention of Venereal Disease and Certain Forms of Cancer" Discussed by Drs John E Rauschkolb, Cleveland, Francis A Ellis Baltimore, Harry M Robinson, Baltimore, Isidore Snapper, New York, S J Zakon, Chicago, I P McCarthy, Boston and Eugene A Hand, Saginaw, Mich

Drs G H Faget and Paul T Erickson, Carville, La presented a paper on "The Chemotherapy of Leprosy" Discussed by Drs Harold M Johnson, Honolulu, Hawaii, M T Von Studdiford, New Orleans, and Paul T Erickson, Carville, La

Drs Samuel M Peck, Sheppard Siegal, Arthur W Glick and Abner Kurtin, New York, presented a paper on "Clinical Problems in Penicillin Sensitivity" Discussed by Drs Harold N Cole, Cleveland, E Myles Standish, Hartford, Conn, Harry M Robinson, Baltimore, Leon Goldman Cincinnati, E E Mandel, Chicago, Marion B Sulzberger, New York, and Sheppard Siegal, New York

Friday, June 13—Afternoon

Drs H J Templeton, C J Lunsford and H V Allington, Oakland, Calif, presented a paper on "Autosensitization Dermatitis" Discussed by Drs C F Lehmann, San Antonio, Texas, Everett R Seale, Houston, Texas, and R M B MacKenna, London, England

Drs Theodore Cornbleet and Meyer Brown, Chicago, presented a paper on "Dermatologic Manifestations as Presenting Symptoms of Psychiatric Disorders" Discussed by Drs Marion B Sulzberger, New York, Francis W Lynch, St Paul, and Adrian Scolten, Portland, Maine

Drs Frank C Combes and Howard T Behrman, New York, presented a paper on "The Technic and Problems of Roentgen Ray Epilation" Discussed by Drs Anthony C Cipollaro, New York, Francis A Ellis, Baltimore, I M Felsher, Chicago, James Louis Pipkin, San Antonio, Texas, George M Lewis, New York, C Guy Lane, Boston, J Walter Wilson, Los Angeles, and Howard T Behrman, New York

Drs June C Shafer, Carl B Braestrup and Jerome K Fisher, New York, presented a paper on 'The Relation of the Exit Dose and Other Dosage Factors to Roentgen Injuries" Discussed by Drs C Guy Lane, Boston, Oris G Hazel, Oklahoma City, J L Schamberg, Philadelphia, Stephen Epstein, Marshfield, Wis, Anthony C Cipollaro, New York, and June C Shafer, New York

Dr G M Crawford, Boston, read a paper on "Injection Therapy for Angiomas" Discussed by Dr H Ford Anderson, Washington, D C

Drs Roy L Kile and Ashton L Welsh Cincinnati, presented a paper on 'The Use of Liquid Oxygen in Dermatology" Discussed by Drs Allen W Pepple Richmond Va, Richard S Weiss St Louis, H V Allington, Oakland, Calif, and Roy L Kile Cincinnati

The retiring chairman thanked all those who gave and discussed papers, those who spent long hours in preparing scientific exhibits, the Atlantic City hosts the Local Committee on Dermatology and Syphilology the management of the Marlborough-Blenheim Hotel and its personnel

The newly elected officers were then installed On motion by Dr Clyde L Cummer, Cleveland, seconded by Dr C Guy Lane Boston and unanimously approved the section extended its thanks and great appreciation to the retiring officers, particularly Dr Anderson who had served the section for four years

SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

Wednesday, June 11—Morning

The meeting was called to order at 9 20 by the chairman, Dr Clarence O Sappington, Chicago

Dr Clarence O Sappington Chicago read the chairman's address on The Status of Industrial Medicine'

Dr Clarence D Selby, Detroit read the Centennial Address entitled 'Influence of the Section on the Development of Industrial Medicine'

The following papers were read in a symposium on "How Can Qualified Medical Testimony (Scientific Proof) Be Attained in Workmen's Compensation Controversy Mr J W Holloway Jr Chicago acted as moderator Drs D J Galbraith, Toronto Canada George N Edson Jackson Heights, N Y Carey P McCord Detroit A G Kammer, New York, W G Workman Tracy Minn and Mr Theodore C Waters, Baltimore Discussed by Mr Theodore H Goding, New York, Dr Henry H Kessler, Newark N J, Mr W H Nickels Jr, Richmond, Va, and Dr Frederick W Slobe, Chicago

Thursday, June 12—Morning

The following officers were elected chairman R H Riley, Baltimore, vice chairman Oscar A Sander Milwaukee, secretary, Rutherford T Johnstone Los Angeles, delegate Earl D Osborne, Buffalo, alternate, Leverett D Bristol, New York, executive committee E L Stebbins, New York, Clarence O Sappington, Chicago and R H Riley, Baltimore

Dr Louis I Dublin, New York, read a paper on 'The Longevity and Mortality of American Physicians' Discussed by Drs Haven Emerson, New York, and Louis I Dublin New York

Dr Sven Forssman, Tomtedoda Sweden, read the address of the invited foreign guest, entitled "Comparative Practices in Industrial Medicine in Sweden and in the United States"

The following papers were read in a symposium on 'The Need for Industrial Health Education, How, When and to What Extent"

Dr. Robert A. Kehoe, Cincinnati, acting as moderator: "Medical Education in Relation to Industrial Health."

Dr. W. S. McEllroy, Pittsburgh: "Pittsburgh as the Logical Center to Establish a Graduate Program of Training in Industrial Health."

Dr. J. M. Carlisle, Rahway, N. J.

Dr. Leonard J. Goldwater, New York: "Practical Points in the Teaching of Industrial Medicine."

Dr. Henry F. Vaughan, Ann Arbor, Mich.: "The Need for Industrial Health Education."

Dr. James H. Sterner, Rochester, N. Y.: "The Education of the Industrial Hygiene Physician."

Mr. W. C. L. Hemeon, Pittsburgh: "Contribution to a Symposium on the Need for Industrial Health Education."

These papers were discussed by Drs. Raymond Hussey, Detroit; Russell L. Haden, Cleveland; T. Lyle Hazlett, Pittsburgh; Carl M. Peterson, Chicago; L. W. Fetzer, Dallas, Texas, and W. S. McEllroy, Pittsburgh.

Friday, June 13—Morning

Dr. Emil Seletz, Los Angeles, read a paper on "New Incisions and Revised Technics in Peripheral Nerve Surgery." Discussed by Dr. Michael Scott, Philadelphia.

Dr. Victor Ross, New York, read a paper entitled "Preliminary Report on Schick Test Toxin Not Requiring Control in Adults." Discussed by Dr. James P. Leake, Washington, D. C.

Dr. Joseph A. Bell, Bethesda, Md., read a paper on "Diphtheria Immunization with an Alum Precipitated Mixture of Pertussis Vaccine and Diphtheria Toxoid." Discussed by Drs. Victor Ross, New York; Harold B. Wood, Harrisburg, Pa.; Maxwell Stillerman, Great Neck, N. Y.; James P. Leake, Washington, D. C., and Joseph A. Bell, Bethesda, Md.

Drs. Elmer H. Loughlin and Norman R. Stoll, Brooklyn, presented a paper on "Hookworm Infections in American Servicemen, with Reference to the Establishment of Ancylostoma Duodenale in the Southern United States." Discussed by Drs. Harold B. Wood, Harrisburg, Pa., and Norman R. Stoll, Brooklyn.

Drs. Loren D. Moore, Geoffrey Edsall and Vlado A. Getting, Boston, presented a paper on "The Massachusetts Blood and Blood Derivatives Program." Discussed by Drs. I. Jay Brightman, Albany, N. Y.; Loren D. Moore, Boston; Claude P. Brown, Philadelphia, and J. W. Mountin, Washington, D. C.

Drs. L. T. Fairhall and H. T. Castberg, Bethesda, Md., presented a paper on "Observations on the Industrial Hygiene Aspects of the Cemented Tungsten Carbide Industry." Discussed by Drs. H. T. Castberg, Bethesda, Md.; Clarence O. Sappington, Chicago; L. T. Fairhall, Bethesda, Md., and Claude P. Brown, Philadelphia.

SECTION ON UROLOGY

Wednesday, June 11—Morning

The meeting was called to order at 9:05 by the chairman, Dr. Grayson Carroll, St. Louis.

Dr. William P. Herbst, Washington, D. C., read a paper on "The Problem of the Posteriorly Located Renal Pelvis Associated with Ptosis."

Dr. Roy B. Henline, New York, read a paper on "Ureteropelvic Obstructions: Symptoms and Treatment."

These two papers were discussed by Drs. John M. Pace, Dallas, Texas; Clark M. Johnson, San Francisco; James Sargent, Milwaukee; David M. Davis, Philadelphia; T. D. Moore, Memphis, Tenn.; Abraham Hyman, New York; William P. Herbst, Washington, D. C., and Roy B. Henline, New York.

Dr. William F. Braasch, Rochester, Minn., read the Centennial Address, entitled "One Hundred Years of Progress in Urology."

Dr. Lloyd G. Lewis, Washington, D. C., read a paper on "Radical Orchiectomy in the Treatment of Testis Tumors."

Drs. Hans R. Sauer, Ernest M. Watson and Eugene M. Burke, Buffalo, presented a paper on "Tumors of the Testicle."

These two papers were discussed by Drs. Harold P. McDonald, Atlanta, Ga.; John Ormond, Detroit; Lloyd G. Lewis, Washington, D. C., and Ernest M. Watson, Buffalo.

Dr. Lowrain E. McCrea, Philadelphia, read a paper on "Primary Carcinoma of the Seminal Vesicles: Differentiation from Extrarectal and Rectal Carcinoma."

Dr. W. J. Kolff, Kampen, Holland, read a paper entitled "The Artificial Kidney." Discussed by Drs. Abraham Hyman, New York, and W. J. Kolff, Kampen, Holland.

The chairman announced the death of Dr. Ernest Granville Crabtree, Boston. On motion by Dr. Gershom Thompson, Rochester, Minn., seconded by Dr. Harold P. McDonald, Atlanta, Ga., it was voted that the secretary record in the minutes an expression of sorrow at Dr. Crabtree's death and that an appropriate letter be sent to Mrs. Crabtree. The members then stood for a few moments of silent tribute.

Thursday, June 12—Morning

Dr. Clarence G. Bandler, New York, presented the report from the American Board on Urology, which was accepted.

The following officers were elected: chairman, Reed M. Nesbit, Ann Arbor, Mich.; vice chairman, Earl E. Ewert, Boston; secretary, Edward N. Cook, Rochester, Minn.; representative to the Scientific Exhibit, John H. Morrissey, New York; delegate, Roy B. Henline, New York; alternate, Vincent J. O'Conor, Chicago.

The chairman announced the award of the gold medal to Drs. George F. Cahill and Meyer M. Melicow, New York, for their exhibit on Tumors of the Adrenal Gland.

Dr. Edwin Davis, Omaha, read a paper on "Disappearance of Carcinomatous Ulceration of the Bladder Following Bilateral Ureterosigmoidostomy." Discussed by Drs. William P. Herbst, Washington, D. C., and Armando Trabucco, Buenos Aires, Argentina.

Dr. Benjamin S. Barringer, New York, read a paper entitled "Twenty-Five Years of Radon Implantation for Bladder Cancer."

Dr. Charles C. Higgins, Cleveland, read a paper on "Total Cystectomy for Carcinoma of the Bladder."

These two papers were discussed by Drs. Thomas D. Moore, Memphis, Tenn.; Leo Edelman, New York; Benjamin S. Barringer, New York, and Charles C. Higgins, Cleveland.

Dr. Grayson Carroll, St. Louis, read the chairman's address, entitled "A Study of Pseudomonas Aeruginosa and Related Bacillary Infections of the Urinary Tract."

Dr. Frank S. Patch, Montreal, Canada, read the address of the invited foreign guest, on "Epithelial Metaplasia of the Urinary Tract."

Dr. M. M. Melicow, New York, read a paper on "The Pathology of Adrenal Tumors."

Dr. George F. Cahill, New York, read a paper on "Pheochromocytomas."

These two papers were discussed by Drs. Earl E. Ewert, Boston; Seymour F. Wilhelm, New York; M. M. Melicow, New York, and George F. Cahill, New York.

Dr. A. J. Scholl, Los Angeles, read a paper on "Peripelvic Cysts of the Kidney, with Report on Two Cases." Discussed by Dr. Basil A. Hayes, Oklahoma City, and A. J. Scholl, Los Angeles.

Friday, June 13—Morning

Drs. Hamilton W. McKay, H. Haynes Baird and Kenneth Lynch Jr., Charlotte, N. C., presented a paper on "An Analysis of Two Hundred Cases of Urinary Calculi, with Particular Reference to Methods of Management of Ureteral Stones."

Col. James C. Kimbrough and Major John N. Furst, Washington, D. C., presented a paper on "Management of Recurrent Formation of Renal Calculi."

These two papers were discussed by Drs. A. E. Goldstein, Baltimore; Frank C. Hamm, Brooklyn; Henry Sangree, Philadelphia; George Livermore, Memphis, Tenn.; Hamilton W. McKay, Charlotte, N. C., and J. C. Kimbrough, Washington, D. C.

Mr. Terrence J. Millin, London, England, read a paper on "Retropubic Operation for Stress Incontinence in Women."

Dr. Armando Trabucco, Buenos Aires, Argentina, read a paper on "The Bladder in the Genital Prolapse."

These two papers were discussed by Drs. Virgil S. Counseller, Rochester, Minn.; J. C. Kimbrough, Washington, D. C.; Terrence J. Millin, London, England, and Armando Trabucco, Buenos Aires, Argentina.

Drs. Herman L. Kretschmer and Stuyvesant Butler, Chicago, presented a paper on "Prostatic Surgery and Heart Disease." Discussed by Drs. Harold C. Habein, Rochester, Minn.; Thomas A. Morrissey, New York; A. E. Goldstein, Baltimore, and Herman L. Kretschmer, Chicago.

Dr. W. W. Scott, Baltimore, read a paper entitled "Implications of Hyaluronidase in Fertility."

Drs. M. Leopold Brodny and Samuel A. Robins, Boston, presented a paper on "Urethrocystography in the Male Child."

These two papers were discussed by Drs. Monroe E. Greenberger, New York; A. E. Goldstein, Baltimore; Henry Sangree, Philadelphia; W. W. Scott, Baltimore, and M. Leopold Brodny, Boston.

SECTION ON ORTHOPEDIC SURGERY

Wednesday, June 11—Morning

The meeting was called to order at 9:10 by the chairman, Dr. Francis M. McKeever, Los Angeles.

The following papers were read in a panel discussion on "Fractures of the Upper End of the Femur," Dr. Philip D. Wilson, New York, acting as moderator:

Dr. George W. Van Gorder, Boston: "Treatment of Acute Fractures of the Neck of the Femur." Discussed by Dr. John Royal Moore, Philadelphia.

Drs. Mather Cleveland, D. M. Bosworth and F. R. Thompson, New York: "Management of Intertrochanteric Fractures of the Femur." Discussed by Dr. Robert H. Kennedy, New York.

Dr. Richard H. Freyberg, New York: "Medical Management of the Patient with a Fractured Hip."

Dr. Carl E. Badgley, Ann Arbor, Mich.: "Cause, Development and Treatment of Aseptic Necrosis of the Femoral Head Following Fracture of the Hip." Discussed by Dr. Alexander P. Aitken, Boston.

Dr. Harold B. Boyd, Memphis, Tenn.: "Results of Treatment of Fractures of the Upper End of the Femur."

Dr. J. A. Dickson, Cleveland: "Treatment of Ununited Fractures of the Femur."

These six papers were discussed by Drs. Warren White, New York; José Valls, Buenos Aires, Argentina; George W. Van Gorder, Boston; Mather Cleveland, New York; Richard H. Freyberg, New York; Carl E. Badgley, Ann Arbor, Mich.; Harold B. Boyd, Memphis, Tenn., and J. A. Dickson, Cleveland.

Thursday, June 12—Morning

Drs. Paul R. Lipscomb, Melvin S. Henderson and Ralph E. DeForest, Rochester, Minn., presented a paper on "Internal Derangements of the Knee." Discussed by Drs. D M. Bosworth, New York, and E. F. Cave, Boston.

Dr. Francis M. McKeever, Los Angeles, read the chairman's address, entitled "Fracture of the Olecranon Process of the Ulna."

Drs. Armin Klein, Robert J. Joplin and John A. Reidy, Boston, presented a paper on "The Treatment of Slipped Capital Femoral Epiphyses." Discussed by Drs. H. R. McCarroll, St. Louis; Tom Outland, Elizabethtown, Pa.; Frank R. Ober, Boston; William Boyd, Memphis, Tenn.; Carl Badgley, Ann Arbor, Mich.; Joseph S. Barr, Boston; Hiram Winnett Orr, Lincoln, Neb., and John A. Reidy, Boston.

Dr. Edwin W. Ryerson, Chicago, read the Centennial Address, on "One Hundred Years of Orthopedic Surgery."

Friday, June 13—Morning

The following officers were elected: chairman, J. Warren White, Greenville, S. C.; vice chairman, D. M. Bosworth, New York; secretary, Joseph S. Barr, Boston; delegate, Archer O'Reilly, St. Louis; representative to Scientific Exhibit, Tom Outland, Elizabethtown, Pa.

Dr. Carlo S. Scuderi, Chicago, read a paper on "Massive Bone Grafts for the Restoration of Defects in Long Bone." Discussed by Drs. T. C. Thompson, New York; Jesse T. Nicholson, Philadelphia, and Carlos S. Scuderi, Chicago.

Dr. G. Edmund Haggart, Boston, read a paper on "The Value of Conservative Management in Cervicobrachial Pain." Discussed by Drs. I. W. Nachlas, Baltimore; James McAteer, New York, and G. Edmund Haggart, Boston.

Dr. José Valls, Buenos Aires, Argentina, read the address of the invited foreign guest, entitled "Aspiration Biopsy in the Diagnosis of Lesions of the Vertebral Bodies."

Dr. Leonard F. Bush, Danville, Pa., and C. Zent Garber, New York, presented a paper on "The Bone Bank." Discussed by Drs. John R. Cobb, New York; Frank E. Stinchfield, New York; Dallas B. Phemister, Chicago, and Leonard F. Bush, Danville, Pa.

Dr. Herbert John Seddon, Oxford, England, read a paper on "Nerve Lesions Complicating Certain Closed Bone Injuries."

Dr. Paul C. Colonna, Philadelphia, read a paper on "Experimental Production of Aseptic Necrosis." Discussed by Drs. Dallas B. Phemister, Chicago; George O. Eaton, Baltimore, and Paul C. Colonna, Philadelphia.

SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

Wednesday, June 11—Afternoon

The meeting was called to order at 2:05 by the chairman, Dr. Martin S. Kleckner, Allentown, Pa.

Dr. H. J. Moersch, Rochester, Minn., read a paper on "Results of Treatment of Esophageal Varices by Injection of Sclerosing Solution." Discussed by Dr. Cecil O. Patterson, Dallas, Texas.

Dr. Bruce C. Lockwood, Detroit, read a paper on "Congenital Gallbladder Anomalies."

The following papers were read in a symposium on "Liver Disease":

Diagnostic Aspects:

Professor John McMichael, London, England, invited foreign guest: "A Review of Some Clinical and Biochemical Problems of Liver Disease as Revealed by Systematic Biopsy Studies."

Drs. William F. Lipp, Alfred R. Lenzner and A. H. Aaron, Buffalo: "The Accuracy of Diagnosis of Jaundice."

Drs. Hans Popper and Murray Franklin, Chicago: "Differential Diagnosis of Hepatitis by Histologic and Functional Laboratory Methods."

Therapeutic Aspects:

Dr. Frederick Steigmann, Chicago: "The Efficacy of Lipotrophic Substances in the Treatment of Liver Cirrhosis."

These four papers were discussed by Drs. Cecil J. W Minneapolis; Theodore Gillman, Johannesburg, South Af David Adlersberg, New York, and Professor John McM London, England.

Dr. J. Arnold Bargen, Rochester, Minn., read the C Address, entitled "The History of Progress in Our of the Digestive Tract During the Last Century."

The following papers were read in a symposium "Pancreas":

Drs. Moses Behrend and Albert Behrend, P "Chronic Pancreatitis Causing Complete and

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Obstruction of the Common Duct: Report of Illustrative Cases."

Dr. Grayson F. Dashiell, Chicago: "Diagnostic Criteria of Carcinoma of the Pancreas."

Drs. Eric E. Wollaeger, Manfred W. Comfort, Arnold E. Osterberg and O. Theron Clagett, Rochester, Minn.: "Functional Efficiency of the Gastrointestinal Tract Following Resection of the Head of the Pancreas (Whipple Operation): Effect of (1) Anastomosing Remaining Pancreas to the Jejunum; (2) Administration of Pancreatin; (3) Variations of the Fat and Nitrogen Content of the Diet."

These three papers were discussed by Drs. Allen O. Whipple, New York; Robert Elman, St. Louis; J. Edward Berk, Philadelphia; Rudolf Schindler, Los Angeles, and Moses Behrend, Philadelphia.

Thursday, June 12—Afternoon

The following officers were elected: chairman, Dr. Sara M. Jordan, Boston; vice chairman, Dr. William H. Daniel, Los Angeles; secretary, Dr. Grant H. Laing, Chicago; delegate, Dr. Louis A. Buie, Rochester, Minn., alternate, Dr. Walter A. Fansler, Minneapolis; representative to American Board of Proctology, Dr. Robert A. Scarborough, San Francisco (for four consecutive one year terms); representative to Scientific Exhibit, Dr. Donovan C. Browne, New Orleans; executive committee, Dr. J. A. Bargen, Rochester, Minn.; Dr. Martin S. Kleckner, Allentown, Pa., and Dr. Sara M. Jordan, Boston.

The following resolution was adopted:

> *Resolved,* That the Committee on Scientific Exhibit of the American Medical Association be requested to authorize the appointment of a proctologist to assist the gastroenterologist as co-representative to the Scientific Exhibit.

Dr. Martin S. Kleckner, Allentown, Pa., read the chairman's address, entitled "Proctologic Surgery of the Large Bowel."

Dr. Saul Schapiro, Brooklyn, read a paper on "The Proctologic Examination of Infants and Children."

Dr. Tom E. Smith, Dallas, Texas, read a paper on "Anterior Pilonidal Cyst."

Drs. Harry E. Bacon and Robert J. Rowe, Philadelphia, presented a paper on "The Preparation and After-Care of the Patient Undergoing Surgery of the Lower Bowel."

These three papers were discussed by Drs. Frank H. Lahey, Boston; Moses Paulson, Baltimore; Edgar J. Poth, Galveston, Texas; Saul Schapiro, Brooklyn, and Robert J. Rowe, Philadelphia.

The following papers were read in a symposium on "Ulcerative Colitis":

Clinical Aspects:

Dr. William Z. Fradkin, Brooklyn: "The Etiologic Diagnosis of Ulcerative Colitis."

Dr. Joseph B. Kirsner, Chicago: "Certain Clinical Aspects of Ulcerative Colitis."

Treatment:

Dr. Moses Paulson, Baltimore: "Total Parenteral Alimentation and Therapy in Ulcerative Colitis: Its Place in Management."

Dr. Richard B. Cattell, Boston: "The Surgical Treatment of Ulcerative Colitis."

These four papers were discussed by Drs. J. A. Bargen, Rochester, Minn.; E. N. Collins, Cleveland; Joseph Felsen, New York; Sidney A. Portis, Chicago; Albert F. R. Andresen, Brooklyn; Garnet W. Ault, Washington, D. C.; Frank H. Lahey, Boston, and Moses Paulson, Baltimore.

The following papers were read in a symposium on "Gastritis and Gastric Neoplasms":

Drs. Leonidas H. Berry and T. Jonathan Cole, Chicago: "Therapy of Chronic Atrophic Gastritis with Eight Years' Gastroscopic Control."

Drs. Anthony Bassler and A. Gerard Peters, New York: "Distinctions Between Gastric Sarcoma and Carcinoma, with Special Reference to the Infiltrating Type of Sarcomas."

Drs. Samuel N. Maimon, Walter Lincoln Palmer and Joseph B. Kirsner, Chicago: "The Prognosis in Gastric Cancer—A Study of Five Year Survivors."

Dr. H. Leonard Bolen, Fall River, Mass.: "The Blood Pattern in Presymptomatic Malignancy of the Gastrointestinal Tract."

These four papers were discussed by Drs. Hyman L. Goldstein, Camden, N. J.; Henry A. Rafsky, New York; Rudolf Schindler, Los Angeles, and Samuel Friedman, New York.

Friday, June 13—Afternoon

A joint meeting was held with the Section on Surgery, General and Abdominal. The proceedings are reported in the minutes of that section.

SECTION ON RADIOLOGY

Wednesday, June 11—Afternoon

The meeting was called to order at 2:05 by the chairman, Dr. Bernard P. Widmann, Philadelphia.

Dr. Gonzalo Esguerra Gomez, Bogota, Colombia, South America, the invited foreign guest, read a paper on "The Question of Cardiac Hypertrophy in Residents of High Altitudes: Radiologic Study Conducted at 8,636 Feet Above Sea Level."

Dr. George W. Holmes, Boston, read the Centennial Address, entitled "Contributions of Radiology to the Diagnosis and Treatment of Disease."

Dr. Leo G. Rigler, Minneapolis, read a paper on "Routine Roentgen Examination of the Stomach of Symptomless Individuals." Discussed by Dr. Paul Swenson, Philadelphia.

Dr. John D. Camp, Rochester, Minn., read a paper on "Nonneoplastic Intracranial Calcification: Roentgenologic Manifestations." Discussed by Dr. Eugene P. Pendergrass, Philadelphia.

Drs. Vincent W. Archer, George Cooper and Norman Adair, University, Va., presented a paper on "Clinical Manifestations of Disease Masked or Modified by Chemotherapy: Increasing Responsibility of the Roentgenologist." Discussed by Dr. George M. Wyatt, Washington, D. C.

Drs. Ira H. Lockwood, Arthur B. Smith and John W. Walker, Kansas City, Mo., presented a paper on "Fundamental Concepts of Radiographic Diagnosis of Lesions of the Kidney." Discussed by Dr. H. Dabney Kerr, Iowa City.

Drs. C. Robert Hughes, John R. Hannan and Bert E. Mulvey, Cleveland, presented a paper entitled "Cholangiography in Stone, Stricture and Surgical Injury of Biliary Ducts."

Thursday, June 12—Afternoon

The following officers were elected: chairman, W. Walter Wasson, Denver; vice chairman, Harry Weber, Rochester, Minn.; representative to Scientific Exhibit, Samuel Donaldson, Ann Arbor, Mich.

Drs. Robert P. Barden and David A. Cooper, Philadelphia, presented a paper entitled "Roentgen Appearance of the Chest in Some Diseases Affecting the Peripheral Vascular System of the Lung." Discussed by Dr. Francis M. Rackemann, Boston.

Drs. L. Henry Garland, San Francisco, and S. F. Thomas, Palo Alto, Calif., presented a paper on "Roentgen Diagnosis of Myocardial Infarction." Discussed by Drs. Philip J. Hodes, Philadelphia, and W. Edward Chamberlain, Philadelphia.

Drs. Marcy L. Sussman and Harold Neuhof, New York, presented a paper on "Pulmonary and Superior Caval Angiography in Relation to Pulmonary and Mediastinal Lesions."

Drs. Max Ritvo and David Davis, Boston, presented a paper on "Clinical and Roentgen Studies of Radiculitis Simulating Coronary Disease." Discussed by Drs. Albert Oppenheimer, Laconia, N. H., and Robert S. Stone, San Francisco.

Dr. Robert Heilig Library
S. M. S. Medical College

Drs. J. Gershon-Cohen and Philip J. Hodes, Philadelphia, presented a paper on "Roentgenographic Examination of Breast Cancer." Discussed by Dr. W. Walter Wasson, Denver.

FRIDAY, JUNE 13—AFTERNOON

Drs. Harry H. Bowing and Robert E. Fricke, Rochester, Minn., presented a paper on "Late Results of Radium Therapy for Carcinoma of the Uterine Cervix." Discussed by Dr. Leda June Stacy, White Plains, N. Y.

Dr. Juan A. del Regato, Columbia, Mo., read a paper on "The Role of Transvaginal Roentgen Therapy in the Treatment of Carcinoma of the Cervix." Discussed by Dr. James A. Corscaden, New York.

Drs. Manuel M. Garcia and Leon J. Menville, New Orleans, presented a paper entitled "Critical Evaluation of Surgical and Radiation Therapy for Carcinoma of the Cervix." Discussed by Drs. Karl H. Martzloff, Portland, Ore., and Dr. James Heyman, Stockholm, Sweden.

Drs. Orville N. Meland, William E. Costolow and John W. Budd, Los Angeles, presented a paper on "The Role of Radiation Therapy in Cancer of the Breast." Discussed by Drs. U. V. Portmann, Cleveland, and Reuben Lavine, Syracuse, N. Y.

Dr. Frederick W. O'Brien, Boston, read a paper on "The Production of Analgesia by X-Radiation." Discussed by Drs. Hugh F. Hare, Boston, and B. J. Toth, Olean, N. Y.

Drs. James F. Kelly, D. Arnold Dowell and John F. Downing, Omaha, presented a paper on "X-Rays in the Prevention and Treatment of Infections." Discussed by Dr. John S. Bouslog, Denver.

Dr. Sidney Rubenfeld, New York, read a paper on "Roentgenologic Treatment of Lymph Nodes and Spleen in Brill-Symmers Disease." Discussed by Dr. Samuel E. Cohen, Elmira, N. Y.

SECTION ON ANESTHESIOLOGY

WEDNESDAY, JUNE 11—MORNING

The meeting was called to order at 9:05 by the chairman, Dr. Charles F. McCuskey, Los Angeles.

On motion by Dr. Ralph M. Tovell, Hartford, Conn., seconded by Dr. Paul M. Wood, New York, it was voted unanimously that the chairman appoint a committee to investigate operating room deaths and to submit a report at the next annual meeting.

Dr. Clarence L. Hebert, Washington, D. C., read a paper on "Balanced Anesthesia for Thoracoplasty." Discussed by Drs. Robert Richard Jones, Battle Creek, Mich., and Robert B. Orr, St. Albans, N. Y.

Dr. Ralph M. Waters, Madison, Wis., read a paper on "Chloroform." Discussed by Drs. Paul M. Wood, New York, and Irving W. Potter, Buffalo.

Dr. Edward B. Tuohy, Rochester, Minn., read a paper on "Anesthesia for Abdominal Surgery." Discussed by Dr. Harry J. Shields, Toronto, Canada.

Dr. Donald E. Hale, Cleveland, read a paper on "Controlled Hypotension by Arterial Bleeding During Operation and Anesthesia." Discussed by Drs. Perry P. Volpitto, Augusta, Ga.; W. James Gardner, Cleveland; Ralph M. Waters, Madison, Wis., and Robert D. Dripps, Philadelphia.

Drs. J. J. Jacoby, J. M. Coon and H. M. Livingstone, Chicago, presented a paper entitled "Effect of Procaine on Liver Function: An Experimental and Clinical Study." Discussed by Drs. Robert D. Dripps, Philadelphia; John Adriani, New Orleans, and Frederick M. Allen, New York.

THURSDAY, JUNE 12—MORNING

The following officers were elected: chairman, Ralph M. Tovell, Hartford, Conn.; vice chairman, Stuart C. Cullen, Iowa City; representative to Scientific Exhibit, Urban Eversole, Boston.

The following nominees were approved by the section for the American Board of Anesthesiology, the board to make final selection of one of the nominees, who will then serve for six years: Drs. Charles F. McCuskey, Los Angeles; Douglass Batten, San Diego, Calif.; Ernest Warnock, Los Angeles.

Dr. Charles F. McCuskey, Los Angeles, read the chairman's address on "The Status of Anesthesiology as a Specialty."

Dr. Frank W. Hartman, Detroit, read a paper entitled "Pathology of Anesthesia." Discussed by Drs. Wesley Bourne, Montreal, Canada; Virgil H. Moon, Philadelphia, and Ivan B. Taylor, Detroit.

Dr. A. R. Hunter, Manchester, England, read the address of the invited foreign guest, entitled "Anesthesia for Operations Within the Vertebral Canal."

Dr. John S. Lundy, Rochester, Minn., read the Centennial Address, entitled "One Hundred Years of Anesthesia."

FRIDAY, JUNE 13—MORNING

Drs. Eunice Christensen and E. G. Gross, Iowa City, presented a paper entitled "A Comparison of the Analgesic Effects in Human Subjects of 6-Dimethyl Amino-4, 4-Diphenyl-3-Heptonone (An-148), Morphine and Meperidine (Demerol) and the Relative Efficiency of An-148 for Preoperative and Postoperative Use." Discussed by Drs. Leo V. Hand, Boston; Benjamin H. Robbins, Nashville, Tenn., and John S. Lundy, Rochester, Minn.

Drs. Henry S. Ruth, Haverford, Pa., Frederick P. Haugen and D. Dwight Grove, Philadelphia, presented a paper entitled "Anesthesia Study Commission: Findings of Eleven Years' Activity." Discussed by Drs. R. J. Whitacre, East Cleveland, Ohio, and Frank H. Lahey, Boston.

Drs. Edwin R. Ruzicka and Morris J. Nicholson, Boston, presented a paper on "Cardiac Arrest." Discussed by Drs. John B. Flick, Philadelphia; Ralph M. Tovell, Hartford, Conn., and Frank H. Lahey, Boston.

Drs. Julia G. Arrowood and Stanley J. Sarnoff, Boston, presented a paper entitled "Use of Differential Spinal Block in the Investigation of Intractable Pain Following Trauma to the Lower Extremity." Discussed by Drs. Meyer Saklad, Providence, R. I., and Joe Baird, Minneapolis.

Dr. John B. Dillon, Los Angeles, read a paper on "Anesthesia in the Aged." Discussed by Drs. Ansel M. Caine, New Orleans, and Mary Karp, Chicago.

SECTION ON GENERAL PRACTICE OF MEDICINE

WEDNESDAY, JUNE 11—MORNING

The meeting was called to order at 9:15 by the chairman, Dr. Paul A. Davis, Akron, Ohio.

Dr. Paul A. Davis, Akron, Ohio, read the chairman's address, entitled "Practice of Medicine Today and the Future."

Dr. Francisco deP. Miranda, Mexico City, Mexico, the invited foreign guest, read a paper on "Nutrition and Endocrinology, with Special Reference to Nutrition Among the Indians of Mexico."

Dr. Walter C. Alvarez, Rochester, Minn., read the Centennial Address, entitled "What Should the General Practitioner Know About This New Psychosomatic Medicine?" Discussed by Dr. Frank N. Allan, Boston.

Dr. Lewis M. Hurxthal, Boston, read a paper on "Differential Diagnosis of Hypogenitalism at Time of Puberty." Discussed by Dr. Wingate M. Johnson, Winston-Salem, N. C.

Dr. Nils P. Larsen, Honolulu, Hawaii, read a paper on "The Use of Fluorine in Pediatrics." Discussed by Drs. William Wolf, New York, and Sixto Y. Orosa, Manila, Philippine Islands.

THURSDAY, JUNE 12—MORNING

The following officers were elected: chairman, Eric A. Royston, Los Angeles; vice chairman, M. B. Casebolt, Kansas City, Mo.; secretary, W. B. Harm, Detroit; executive committee, Eric A Royston, Los Angeles, Paul A Davis Akron, Ohio, and Wingate M Johnson Winston-Salem N C, delegate, Howard F Griffin Graham, Texas, alternate Tom Robinson Salt Lake City.

Dr. L. E. Poole, Glendale Calif read a paper on "The General Practitioner as an Adjunct to the Industrial Surgeon" Discussed by Drs Clarence D Selby Detroit and W B Harm Detroit

Dr Marion B Sulzberger, New York read a paper on "Common Misconceptions in Regard to Dermatology" Discussed by Drs Donald M Pillsbury, Philadelphia, and F W Lynch, St Paul

Dr. Francis D Murphy, Milwaukee, read a paper on "Arterial Hypertension The Diagnosis and Treatment of Its Complications" Discussed by Drs N C Gilbert Chicago, Frederick M Allen, New York and David Ayman Boston

Dr L Lewis Dill Detroit read a paper entitled "The Stuffy Nose" Discussed by Dr G [illegible] Chicago

Drs Arthur R Metz and Raymond H [illegible] Chicago, and Gerrit Dangremond Lake Bluff Ill presented a paper entitled "The [illegible] Melanoma" Discussed by Dr Grover C Penberthy, Detroit

Dr Gilson Colby Engel, Philadelphia read a paper on "Reducing Mortality in Gastric Carcinoma" Discussed by Drs T Grier Miller, Philadelphia, and Eric A Royston Los Angeles

FRIDAY, JUNE 13—MORNING

Dr T E Robinson Salt Lake City read a paper entitled "Further Observations on Dehydration Treatment in Poliomyelitis with Some New Concepts in the Pathologic Physiology of the Disease" Discussed by Dr George J Boines, Wilmington, Del

Drs Robert L McMillan and Charles R Welfare Winston-Salem, N C, presented a paper on "The Treatment of Chronic Auricular Fibrillation with Quinidine Sulfate" Discussed by Dr George T Harrell Jr, Winston Salem N C

Dr. Edward Weiss, Philadelphia read a paper on "Psychotherapy in Everyday Practice" Discussed by Drs O Spurgeon English, Philadelphia, Dr Sidney A Portis Chicago and Dr Herbert F Robb, Belleville, Mich

Dr R B Robins, Camden, Ark, read a paper entitled "Hints in General Surgery" Discussed by Dr Philip Thorek, Chicago

Drs Stuyvesant Butler and William A Thomas Chicago, presented a paper on "Headache" Discussed by Dr Paul A Davis, Akron, Ohio

SECTION ON MISCELLANEOUS TOPICS

Session on History of Medicine

WEDNESDAY, JUNE 11—AFTERNOON

The meeting was called to order at 2 o clock by the acting chairman, Dr. Howard Dittrick, Cleveland Dr A H Whittaker, Detroit, acted as secretary

The following papers were read on the "History of American Medicine"

Dr M P Rucker, Richmond, Va "In the Old Dominion"

Dr Henry R Viets, Boston "In the Massachusetts Bay Colony"

Dr R H Shryock, Philadelphia "In Philadelphia"

Dr E F Horine, Brooks, Ky "In Kentucky and the Mississippi Valley"

Dr E Ashworth Underwood, London, England, read the address of the invited foreign guest, entitled "Spread of the Public Health Movement in England, 1847-1875"

The following papers were read on the "History of Military Medicine"

Dr R E Dyer, Bethesda, Md : "Public Health Service"

Dr L H Roddis, Washington, D C. "United States Navy."

Dr Harold W Jones, Washington, D C. "United States Army"

Session on Physical Medicine

THURSDAY, JUNE 12—AFTERNOON

The meeting was called to order at 2 10 by the chairman, Dr Frank H Krusen, Rochester, Minn

Dr D Y Solandt, Toronto, Canada, read the address of the invited foreign guest, on "The Relationship of Physical Medicine to Industrial Medicine"

Dr Arthur Abramson, a paraplegic of World War II, a patient in a Veterans Administration hospital, now working in the Veterans Administration Medical Rehabilitation program, presented the following resolution, which on motion by Dr Frank R Ober, Boston, seconded by Dr Sidney Licht, Boston, was unanimously adopted

> *Resolved*, That the Section on Physical Medicine, in session at the Centennial Meeting of the American Medical Association hereby expresses its deep gratitude to Mr Bernard M Baruch for his wisdom, vision, leadership and personal generosity in bringing the benefits of physical medicine and rehabilitation to increasing numbers of America's disabled and that a copy of this resolution be forwarded to Mr Baruch with the heartfelt thanks of this assembly

Dr Earl C Elkins, Rochester, Minn, read a paper on "Rehabilitation of Paraplegics"

Drs Arthur L Watkins and Jacob Ellis Finesinger, Boston, presented a paper on "Psychiatric Aspects of Physical Medicine"

Dr Steven M Horvath, Philadelphia, read a paper on "Fundamentals of Physical Medicine of Interest to the General Practitioner"

The following papers were read in a panel discussion on "Physical Medicine in General Practice," with Dr Frank H Krusen Rochester, Minn, acting as moderator

Dr Walter M Solomon, Cleveland "Physical Treatment of Arthritis"

Dr Walter S McClellan, Saratoga Springs, N Y "Physical Medicine in the Treatment of the Aged"

Dr Frank R Ober, Boston: "Physical Medicine and Backache"

Dr Anthony C Cipollaro, New York "Physical Treatment of Common Dermatologic Conditions"

Dr Miland E Knapp, Minneapolis "Physical Medicine in the Management of Fractures"

Session on Allergy

FRIDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr Harry L Huber, Chicago

Dr Harry L Alexander, St Louis, read a paper on "Allergy in the Perspective of General Medical Practice" Discussed by Dr Stearns S Bullen, Rochester, N Y

Dr Francis C Lowell, Boston, read a paper on "The Newer Concept of Allergy to Drugs and Bacteria" Discussed by Dr. M G Bohrod, Rochester, N Y

Dr Leo H Criep, Pittsburgh, read a paper on "The Practical Aspects of Allergic Rhinitis" Discussed by Dr Theodore L Squier, Milwaukee

Dr Jerome Glaser, Rochester, N Y, read a paper on "Cutaneous Allergy in Pediatric Practice" Discussed by Dr. Rudolph Baer, New York

Dr Samuel M Feinberg, Chicago, read a paper on "The Newer Drugs in the Treatment of Allergic Diseases" Discussed by Dr Leon Unger, Chicago

The following participated in a panel discussion on "The Treatment of Asthma" Drs J Harvey Black, Dallas, Texas, moderator, Charles H Eyerman, St Louis, Louis Tuft, Philadelphia, and George Piness, Los Angeles The discussion was summarized by Dr Robert A Cooke, New York

Washington Letter

(From a Special Correspondent)

July 2, 1947.

Radioisotopes Described as Holding Great Promise to Mankind

The Atomic Energy Commission's medical board of review announced after its first meeting that "no phase of the atomic energy program offers greater promise of benefit to mankind" than the continued supply of radioisotopes. Radioactive counterparts of normal atoms were said to be used in various fields of medical, biologic, agricultural and industrial research. The board also reported that the measures taken by the Atomic Energy Commission for the protection of workers engaged in development of atomic energy had made a "potentially dangerous occupation one of the safest in America." The board stated that the training of research workers "is probably the most important form of support which the commission can give to outside medical and biological research." The medical board was formed to check on commission research in medical fields and to suggest policies on research carried on by nongovernmental agencies. Dr. Robert F. Loeb, Lambert professor of medicine, Columbia University College of Physicians and Surgeons, New York, is chairman.

House Committee Approves Pay Boost for Service Doctors, Dentists

The House Armed Services Committee has approved legislation boosting the pay of Army, Navy and Public Health Service doctors and dentists. Medical men now in the services and those entering within the next two years will receive an additional $100 a month over their regular pay and allowances under the measure. Those rated as specialists in various fields of medicine would, in addition, be given a 25 per cent increase in their base longevity pay. A subcommittee report stated that "civilian practice is so lucrative to a private practitioner that some action must be taken by Congress or there will be insufficient doctors to adequately provide for Army and Navy personnel." The bill excludes young army and navy reserve doctors whose medical education expenses are paid by the government, unless they are from the regular services.

Council to Conduct Hospital Survey

The Hospital Advisory Council of the District of Columbia has announced that it plans to conduct a survey of Washington's hospital and health facilities and needs as a first step toward federal aid in a construction program under the Hospital Survey and Construction Act of 1946. Still under dispute is the transfer of the Nevius tract, adjacent to Arlington National Cemetery, as the site of a large veterans' hospital.

Advocates Federal Agency for Physically Handicapped

Representative Ray J. Madden, Democrat of Indiana, proposed the establishment of a government department devoted to the interests of the nation's 8 million physically handicapped persons at a meeting of the American Federation of the Physically Handicapped. The federation president, Paul Strachan, lauded Robert C. Goodwin, director of the United States Employment Service, for having placed more than 1,300,000 handicapped persons in jobs.

Advocates Including Question on Vaccination in Census Queries

A dermatologist in Brooklyn has asked the Department of Commerce to include in its census queries "Have you ever been successfully vaccinated?". He explained that it would provide accurate figures on the rate of vaccination and should be followed by a federal law making vaccination against smallpox compulsory.

Coming Medical Meetings

Alaska Territorial Medical Association, Fairbanks, July 28-30. Dr. William J. Blanton, Juneau, Secretary.

American Physiotherapy Association, Pacific Grove, Calif., July 6-12. Miss Mildred Elson, 1790 Broadway, New York 19, Secretary.

Medical Legislation

STATE LEGISLATION

Alabama

Bill Introduced.—S. 121 proposes to require all persons within the ages of 13 and 50 years to be examined and x-rayed or otherwise tested for tuberculosis, the test to be performed either by agents of the state board of health or by doctors or technicians approved by the state board of health.

Bill Passed.—H. 151, which passed the house June 10, to amend the law relating to marriages, proposes that each applicant for a marriage license shall file a certificate signed by a legally licensed physician in Alabama or in the state where the applicant resides certifying that the applicant is not infected with syphilis in a communicable stage. The present law requires such an examination for males only.

Connecticut

Bills Passed.—H. 550, which passed the senate June 3, to amend the medical practice act, proposes to grant the board discretion in accepting licenses from other states in lieu of examination. The proposal would further require that a person who has been refused a certificate by the state board of healing arts may not qualify for approval without examination by the license examining board until he has met the requirements of and been certified by the state board of healing arts. S. 329 which passed the senate June 2, proposes to exempt from taxation Connecticut hospitals operating without possibility of profit.

Bills Enacted.—H. 1375, which was approved June 19, creates a division of professional and vocational licensing to include, among others, the state board of healing arts, the medical examining board, the board of osteopathic registration, the board of chiropractic examiners and the board of naturopathic examiners. S. 133, which was approved June 9, provides higher minimum requirements and more rigid supervision of the professional practice of osteopathy in the state.

Florida

Bills Enacted.—H. 257, which became law without approval June 16, 1947, provides for the licensing, inspecting and regulating of hospitals and the creation of an advisory hospital council. S. 245, which was approved May 15, authorizes the superintendent of the Florida State Hospital, when unable to obtain necessary medical personnel from within the state, to employ competent, experienced medical personnel from outside of the state of Florida and provides that personnel so employed shall be exempt from existing requirements of law as to time of residence in the state and also as to requirements relating to the passing of an examination in the basic sciences.

New Jersey

Bills Enacted.—A. 158, which has become chapter 243 of the Laws of 1947, amends the medical practice act by granting the same recognition to Canadian and Newfoundland medical schools as is granted to medical schools of the United States. S. 208, which has become chapter 323 of the Laws of 1947, authorizes the state department of health to purchase and distribute free, in accordance with rules of said department, antibiotics for use in preventing or treating communicable diseases.

Ohio

Bill Enacted.—H. 294, which was approved May 17, amends the law relating to the practice of chiropody by authorizing the state board of medical examiners to adopt rules and regulations permitting in the practice of chiropody the use of such drugs as are necessary to such practice.

Pennsylvania

Bill Passed.—H. 982, which passed the senate June 14, proposes to define chiropody as "the diagnosis and treatment of the ailments of the human foot. This shall not confer the right to amputate any part of foot, leg or toes or the use of any anesthetic other than local for the treatment of any constitutional disease."

Rhode Island

Bill Enacted.—H. 612, which was approved June 2, is a hospital survey and construction act requiring a survey of hospital facilities in the state and the preparation of a program for the construction of additional needed facilities. The law requires the appointment of an advisory hospital council and authorizes the director of the state department of health to apply to the surgeon general for federal funds to assist in either the survey or the construction of new facilities.

South Carolina

Bill Enacted.—H. 761, which was adopted April 30, appoints a commission to make a full investigation of the practices of the board of naturopathic examiners in the state in the matter of issuance of licenses, the examinations and personal qualifications required of applicants to practice naturopathy in the state and the propriety of granting licenses therefor.

Texas

Bill Passed.—H. 217, which passed the senate June 2, proposes, among other things, that any physician duly licensed under the laws of Texas to practice medicine who, when an autopsy is ordered by a justice of the peace, performs the autopsy in good faith in the belief that the order of the autopsy is a valid order, shall not be held liable for damages in the event it should be determined that the order of autopsy made by the justice of the peace was for any reason invalid.

GOVERNMENT SERVICES

ARMY

DISCHARGE OF MEDICAL OFFICERS

The War Department has announced that, effective July 1, all nonvolunteer doctors, dentists, dietitians and Veterinary and Sanitary Corps officers will be eligible for separation on completion of two years' service. Nurses, physical therapists and Medical Administrative Corps officers except those who have volunteered for extended active duty will be eligible for immediate separation. Critically needed medical officers can still be individually retained when it is essential for the proper care of patients, the announcement stated. Thirty-six specialists are still being retained as essential in army hospitals. Major Gen. Raymond W. Bliss, newly appointed Surgeon General, explained that this new demobilization plan will permit the separation of medical specialists who previously have been subject to three years' service, and it will facilitate the reclassification of young doctors in specialist grade.

Service requirements for members of both the Veterinary and the Sanitary Corps will be reduced from thirty-two months to twenty-four months. Practically all nonvolunteer Medical Administrative Corps officers and physical therapists have already been separated, and the reduction in length of service requirements will affect only a handful of these officers. There is no change for dentists, dietitians and nurses.

ARMY AWARDS AND COMMENDATIONS

Colonel Burr Noland Carter

The Legion of Merit has been awarded to Col. Burr Noland Carter, M. C., A. U. S., of Cincinnati. The citation read in part as follows: "He served as assistant director, Surgical Consultants Division, Office of the Surgeon General, from March 13, 1942, to Aug. 13, 1945. The part played by Colonel Carter in the proper assignment of well qualified surgical personnel, the selection of the finest available surgical equipment and supplies for use throughout the Army, the development of sound fundamental professional policies, his work as administrator of an extensive penicillin research program conducted by the Medical Department when little was known about this new drug and, finally, his role in the development of the whole blood and blood plasma programs of the Army were of greatest importance to the Medical Department and to the American soldier. The low mortality rate among the wounded in this war is directly related to Colonel Carter's knowledge, vision, administrative skill and energetic efforts." Dr. Carter graduated from the University of Virginia Medical School in 1919 and entered the military service March 13, 1942.

Colonel Harry A. Bishop

The Legion of Merit has been awarded to Col. Harry A. Bishop, M. C., U. S. Army, who performed exceptionally meritorious service as commanding officer, Welch Convalescent Hospital, Daytona Beach, Fla., from April 1945 to July 1946. The citation states that his energetic devotion to duty, initiative, judgment, leadership and administrative ability has been superior. He has been responsible for the outstanding accomplishment of this hospital in reconditioning and rehabilitation of overseas sick and wounded which has reflected great credit on the service. Dr. Bishop graduated from the University of Maryland School of Medicine, Baltimore, in 1912, and entered military service June 16, 1918.

Colonel Frank L. Cole

The Legion of Merit has been awarded to Col. Frank L. Cole, M. C., U. S. Army. According to the citation, as commanding officer of Wakeman Hospital Center, Camp Atterbury, Indiana, he effectively developed and perfected the organization and functioning of his command from May 1945 to December 1945. Responsible for the supervision of the newly activated center, which included the general hospital having the largest number of authorized beds of any hospital in the Fifth Service Command, in addition to a convalescent hospital of 6,000 beds and an enlisted technicians' school he successfully coordinated its diversified and rapidly expanding activities. Dr. Cole graduated from the University of Illinois College of Medicine in 1914 and entered the military service in March 1917.

Colonel John M. Tamraz

The Legion of Merit has been awarded to Col. John M. Tamraz, M. C., U. S. Army, for exceptionally meritorious conduct in the performance of outstanding service as surgeon, Headquarters, Services of Supply, China-Burma-India Theater, during the period March 1942 to December 1943. Colonel Tamraz effectively solved the many intricate problems coming within his province in connection with the organization of the medical facilities of the Services of Supply, including a highly valuable liaison with the military medical services of the British. His resourcefulness, efficiency, energy and devotion to duty made him of outstanding value in the organization and initial accomplishment of its mission, thereby reflecting great credit on himself and on the armed forces of the United States. Dr. Tamraz graduated from Columbia University College of Physicians and Surgeons, New York, in 1917 and entered the military service in August 1918.

Colonel William B. Foster

The Legion of Merit has been awarded to Col. William B. Foster, M. C., U. S. Army. According to the citation "he performed exceptionally meritorious service as senior medical member of the Secretary of War's Separation Board from January 1944 to February 1946. He devoted long and arduous hours to the professional analysis of thousands of cases involving final separation of officers from active military service. His recommendations, drawn from careful research and analysis of medical records, were strongly reflected in the final decisions rendered by the board." Dr. Foster graduated from Vanderbilt University Medical School in 1916 and entered military service in 1917.

Colonel William F. DeWitt

The Legion of Merit has been awarded to Col. William F. DeWitt, M. C., U. S. Army. The citation read as follows: "He performed meritorious service as staff surgeon, Headquarters, Southeast Air Corps Training Center, from February 1942 to February 1943. With outstanding administrative ability he overcame the difficulties occasioned by the expansion of his duties incident to mobilization. On his assignment to this office he quickly developed it into an efficient and smoothly running organization." Dr. DeWitt graduated from Baylor University College of Medicine, Dallas, Texas, in June 1924 and entered the military service Nov. 15, 1924.

Lieutenant Colonel Leonard W. Hines

The Legion of Merit was recently awarded to Lieut. Col. Leonard W. Hines, M. C., A. U. S., San Francisco. "While serving with the Army Air Forces Training Command, from April 1941 to February 1946" says the citation, he "contributed prominently to the increase of air crew safety, specifically in connection with high altitude flight operations. His outstanding achievements and exemplary devotion to duty reflect great credit on himself and the Army Air Forces." Dr. Hines graduated from the University of California Medical School in 1933 and entered the service April 24, 1941.

Lieutenant Colonel Matthew Molitch

The Army Commendation Ribbon has been awarded to Lieut. Col. Matthew Molitch, M. C., A. U. S., of Atlantic City, N. J., who, according to the citation, did exceptionally meritorious work in the performance of outstanding service as neuropsychiatric consultant, Armored Replacement Training Center, Fort

Knox, Kentucky, from January 1944 to Jan. 10, 1946. Dr. Molitch graduated from the University of Pennsylvania School of Medicine, in 1929 and entered the service July 24, 1942.

Lieutenant Colonel Edwin S. Kagy

The Bronze Star Medal was recently awarded to Lieut. Col. Edwin S. Kagy of New Orleans by direction of the President for outstanding courage and medical ability in protecting the health and lives of fellow prisoners while serving as surgeon and physician at the Omori, Shinagawa, Niigata and Tokyo 3D prison camps in Japan from September 1943 to August 1945. Dr. Kagy graduated from the School of Medicine of Tulane University of Louisiana in New Orleans in 1934 and entered the military service Aug. 5, 1935.

Captain Granville W. Larimore

The Legion of Merit has been awarded to Capt. Granville W. Larimore, M. C., A. U. S., of New York. The citation read in part as follows: While serving in various capacities in the preventive medicine service, Office of the Surgeon General, from August 1943 to September 1945 he performed notably outstanding service. As Chief of the Education Branch, Venereal Disease Control Division, Captain Larimore was a key figure in promoting a complete armywide venereal disease education program. As chief of the Health Education Unit, his responsibilities were extended to all health education matters in the field of preventive medicine. Dr. Larimore graduated from Rush Medical College, University of Chicago, in 1936 and entered the military service in June 1942.

NAVY

MEETING OF NAVY CONSULTANTS

The Board of Consultants to the Bureau of Medicine and Surgery met June 16 at the Naval Medical Center, Bethesda, Md., in connection with the graduate medical training program of the Navy, to review the progress made during the first year of the program (The Journal, June 28, p. 814), and to formulate future plans. The consultants are mostly former Naval Reserve officers, and as members of American specialty boards they are assisting the Navy in providing training which will meet the standards of the American specialty boards.

Those attending the meeting were Drs. W. M. Craig, chairman, Rochester, Minn.; Howard K. Gray, Rochester, Minn.; Marion B. Sulzberger, New York; Alphonse McMahon, St. Louis; E. N. Broyles, Baltimore; Donald Hale, Cleveland; Paul Titus, Pittsburgh; Joseph S. Barr, Boston; J. Roscoe Miller, Chicago; George M. Lyon, Huntington, W. Va.; Wendell Scott, St. Louis; Paul Greely, Chicago, and M. G. Wastmoreland, Chicago. Following the meeting a buffet supper in honor of the members of the board was held at the quarters of Capt. L. O. Stone (MC), U.S.N., at the Naval Medical Center.

NAVY AWARDS AND COMMENDATIONS

Captain Louis H. Roddis

Capt. Louis H. Roddis (MC), has been awarded the Navy Commendation Ribbon for service rendered in World War II as Senior Medical Officer of the U. S. S. *Relief*. The citation reads in part as follows: While serving as senior medical officer of the U. S. S. *Relief* from March 4 to Sept. 9, 1944 his professional skill and devotion to duty contributed to the smooth and efficient functioning of the Medical Department. During fleet concentrations he rendered invaluable consultation service and dealt with many medical problems, both in disease prevention and in evacuation of the sick and wounded. Under his direction, during the capture of Saipan and Tinian, large numbers of serious casualties were embarked and transported, many directly from the beachheads. His performance of duty was outstanding and his conduct was at all times in keeping with the highest traditions of the U. S. Naval Service. Dr. Roddis graduated from the University of Minnesota Medical School in 1913 and entered the naval service in 1914. He is now chief of the publications division of the Bureau of Medicine and Surgery and editor of the *United States Naval Medical Bulletin*.

VETERANS ADMINISTRATION

THE VETERAN POPULATION

According to the latest tabulation by the Veterans Administration there was a total of 18,188,000 living veterans as of May 1, of whom 14,267,000 served in World War II. More than 100,000 veterans live in Alaska, the Canal Zone, Hawaii and Puerto Rico and some 50,000 in foreign countries exclusive of the Philippines. The total number estimated does not include United States citizens who served only in Allied military forces, some of whom are eligible for various Veterans Administration benefits.

CONTRACT FOR LOUISIANA HOSPITAL

The War Department has announced that the Army Corps of Engineers has let the architect-engineer contract for the Veterans Administration hospital at Mound Bayou, La., which will be a 200 bed general medical and surgical hospital. The Mound Bayou is another unit in the construction program involving seventy-four hospitals and the expenditure of $770,000,000 undertaken by the Corps of Engineers for the Veterans Administration.

HOSPITALS AT PITTSBURGH

The Army Corps of Engineers has awarded the architect-engineer contract for the veterans' neuropsychiatric hospital at Pittsburgh and about a week ago made a similar contract for the veterans' general medical and surgical hospital at Pittsburgh. These hospitals will have a capacity of 1,300 and 1,200 beds respectively.

PERSONALS

Dr. Merlin H. Draper, Tampa, has been appointed consultant in tuberculosis to the medical staff of Bay Pines (Florida) Veterans' Hospital. He is at present superintendent and medical director of the Florida State Tuberculosis Sanatorium and previously had been medical director at the Irene Bryon Sanatorium, Fort Wayne, Ind., for nineteen years.

Dr. Cleve C. Odum has become manager of the Veterans Administration hospital at Augusta, Ga., succeeding Dr. Henry O. Witten, who was transferred to a veterans' hospital in California, where he planned to retire.

MISCELLANEOUS

SALE OF SURPLUS GOVERNMENT PROPERTY

The War Assets Administration is conducting sales of surplus government property announced by the following regional offices. Physicians who are veterans have certain priorities in the purchase of surplus government property.

Regional Office, 728 Fifteenth Street, Denver 2. Sale of drugs, laboratory equipment and supplies, hospital and surgical supplies. Sale closes July 8.

Regional Office, 8900 South Broadway, St. Louis. Sale of surgical knives, catheters, bone chisels, forceps, proctoscopes, operating scissors and utensils and dressing sterilizers. Sale closes July 14.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Arizona Society of Psychiatry and Neurology.—This society was founded at a meeting on May 7 during the annual meeting of the Arizona State Medical Association at Tucson. The meeting was attended by most of the physicians practicing psychiatry and neurology in the state. Regular meetings are planned for the future. Dr. Otto L. Bendheim, Phoenix, was elected president and Dr. Lindsay E. Beaton, 1650 North Cambell Avenue, Tucson, secretary.

COLORADO

Dr. Sabin Receives Medal.—Dr. Florence R. Sabin, Denver, recently received the first Jane Addams Medal given by Rockford College, Rockford, Ill., for distinguished service by an American woman, for her achievements as a leading spirit in public health programs in Colorado. Dr. Sabin retired a few years ago from the Rockefeller Institute of Medical Research, New York, only to find herself head of the state subcommittee on health, on which she has been very active.

CONNECTICUT

Rural Health Conference.—New England's first all day rural health conference will be sponsored by the Connecticut State Medical Society and the University of Connecticut, New Haven, July 16, with Dr. Norman H. Gardner, East Hampton, chairman. About 300 representatives of civic, social, farm and health agencies will be invited to the conference. The program will include talks by leaders of state and private health agencies and panel discussions on the control of communicable diseases, housing, sanitation, school health, mental health, chronic diseases and dental health. Dr. James R. Miller, Hartford, president of the state medical society, will preside at the morning program.

Dr. Long Succeeds Dr. Blake as Dean at Yale.—Dr. C. N. Hugh Long, Sterling professor of physiologic chemistry, Yale University School of Medicine, New Haven, since 1938, and chairman of the department since 1936, was appointed dean of the medical school beginning July 1 to succeed Dr. Francis G. Blake. Dr. Long took his medical degree at McGill University Faculty of Medicine, Montreal, Que., 1928, where he was also lecturer in medical research from 1925 to 1929. He was assistant professor of medicine at the University of Pennsylvania School of Medicine, Philadelphia, 1929-1932, and director of the Cox Medical Research Institute, 1932-1936. He is a member of the Committee on Research in Endocrinology, National Research Council.

GEORGIA

State Medical Election.—At the annual meeting of the Medical Association of Georgia Dr. Steve P. Kenyon, Dawson, became president and Dr. Edgar H. Greene, Atlanta, president-elect. Drs. J. Victor Roule, Augusta, and Theodore J. Ferrell, Waycross, were elected vice presidents. Dr. Edgar D. Shanks, Atlanta, will continue as secretary. The session voted to make the Abner Wellborn Calhoun Lectureship a permanent lectureship of the association. For distinguished service to organized medicine and for other activities as well, Dr. Allen H. Bunce, Atlanta, was awarded the Hardman Loving Cup. He has long been an officer of the association and for many years was a member of the Board of Trustees of the American Medical Association. Physicians registered for the meeting numbered 657.

Dr. Warren Heads Physiology Department.—Dr. James V. Warren, formerly associated with Emory University School of Medicine, Atlanta, and during the past year assistant professor of medicine at Yale University School of Medicine, New Haven, Conn., has accepted the appointment as professor of physiology and chairman of the department at Emory. A graduate of Harvard Medical School, Boston, 1939, Dr. Warren has received in competition the "Travel Award" given by the American Physiological Society for the best abstract of a paper that might be read at the seventeenth International Physiological Congress, which is to be held at Oxford, England, July 22-25. This abstract was on a project carried out during Dr. Warren's association with the department of medicine at Emory. He succeeds Dr. J. George Bachmann, who is retiring at the end of the present session.

ILLINOIS

Robert Coghill Cited by University of Kansas.—A distinguished service citation was conferred on Robert D. Coghill, Ph.D., Lake Bluff, Ill., by the University of Kansas in recognition of his public service in conducting research that made possible mass production of penicillin. Dr. Coghill, formerly in charge of the research program of the U. S. Department of Agriculture at Peoria, is now director of research of Abbott Laboratories in North Chicago.

Chicago

Dr. O'Conor Heads Department of Urology.—Dr. Vincent J. O'Conor, associate professor of urology at Northwestern University Medical School, has been appointed chairman of the department to succeed Dr. Louis E. Schmidt, now professor emeritus. Dr. O'Conor, a graduate of Rush Medical College, Chicago, 1917, is chairman of the urology department at Wesley Memorial Hospital and advisory urologist at Chicago Memorial Hospital.

Two Nationally Known Pharmacists Die.—The American Society of Hospital Pharmacists has requested the publication of the following deaths: William J. Gray, chief pharmacist of Presbyterian Hospital, Chicago, for thirty-five years, died Sept. 10, 1946, aged 79. Irwin A. Becker, chief pharmacist at Michael Reese Hospital for forty years, died March 13. These men were known far and wide as advocates of the best in professional pharmacy.

Dr. Harrison Appointed Vice President.—Roland W. Harrison, Ph.D., dean of the division of biologic sciences, University of Chicago, will become vice president of the university and dean of faculties July 1, succeeding Lawrence A. Kimpton, Ph.D., resigned to become dean of students and professor of philosophy at Stanford University August 1. Dr. Harrison became associated with the University of Chicago in 1937 as an assistant professor of bacteriology, becoming associate professor in 1941 and full professor in 1943. He has been dean of the division of biologic sciences since 1944.

Appoint Superintendent at Wesley Memorial.—Ralph M. Hueston, superintendent of Hurley Hospital, Flint, Mich., has been appointed superintendent of Wesley Memorial Hospital, filling the vacancy caused by the death of Edgar Blake Jr. last March. Mr. Hueston has had almost a quarter of a century of experience in hospital administration, beginning at the Galesburg Cottage Hospital in 1924. He came to Austin Hospital, Chicago, in 1926. After ten years at Silver Hospital in Joliet, Ill., he went to Hurley Hospital in 1936. He has been active on the executive committee of Michigan set up to survey that state's hospital program.

Dr. Dragstedt Succeeds Dr. Phemister.—Dr. Lester R. Dragstedt, a graduate of Rush Medical College, 1921, on June 20 was appointed Thomas D. Jones professor and chairman of the department of surgery, University of Chicago, to succeed Dr. Dallas B. Phemister, who will retire July 1 as head of the department which he organized twenty-two years ago. Dr. Dragstedt came to the university in 1921 as assistant professor of physiology. In 1925 he was made associate professor of surgery and in 1930 professor of surgery. He is a founder of the American Board of Surgery. Dr. Phemister will continue at the university as Thomas D. Jones professor emeritus in the department.

INDIANA

Dr. Van Nuys Appointed Dean of Medicine.—Indiana University announced June 14 the appointment of Dr. John D. Van Nuys, 39, member of its medical staff, as dean of the School of Medicine. Since the resignation of Dean Willis A. Gatch last July, Dr. Van Nuys has been executive secretary of the Interim Committee. A graduate of Indiana University School of Medicine, 1936, he has been a director of admissions at the Indiana University medical center, Indianapolis, a director of admissions to the University Hospital and an assistant in medicine at the university.

LOUISIANA

New Director of Leprosarium.—The U. S. Public Health Service has named Dr. Frederick A. Johanson, Carrville, who has been connected with the institute for over twenty years, director of the United States Marine Hospital (National Leprosarium) at Carrville. He will replace Dr. G. A. Faget, former director, who has been ill.

Form State Allergy Society.—The Louisiana State Allergy Society was formed April 1 in Shreveport. The purposes of the society are to further the study of allergy, promote discussion and bring together the allergists of the state. Drs. Bernard G. Efron, New Orleans, was elected president, Henry D. Ogden, New Orleans, vice president and Joseph D. Youman Jr., Shreveport, secretary-treasurer.

MICHIGAN

Plans to Protect Health of Vacationists.—The Michigan Department of Health, Lansing, began June 16 to check up on all sanitary facilities of resort areas which will accommodate millions of summer visitors. Water, food and milk supplies and sewage disposal will be checked, camps and resorts inspected, swimming places approved and polluted lakes and streams posted with warning signs. If sanitary practices are approved, centers bidding for tourist trade will display the sign "Sanitation Approved." The snail eradication program of the Michigan Stream Control Commission is under way for its eighth consecutive year. Swimmers' itch is caused by microscopic larvae that develop in certain kinds of snails. The commission sends men into the northern resort country to apply the snail killing chemicals, but local residents and communities have to furnish the chemicals, as no state funds have been provided for material.

NEW YORK

Rochester Academy Awards.—Dr. Clarence P. Thomas, Rochester, was presented with the Albert David Kaiser Medal at the Rochester Academy of Medicine June 6 on the basis of his war service as chairman of the Medical Defense Committee and the succeeding War Participation Committee Dr. Charles R. Witherspoon was honored with a special citation and a life membership in the academy. Dr. Frank R. Schell, assistant in pathology, Rochester General Hospital, was the recipient of the award presented yearly by Mrs. David B. Jewett for the best case history submitted by a house officer of an accredited Monroe County hospital.

New York City

Cancer Control in Industry.—The Brooklyn Cancer Committee has released its fifth monthly cancer control reminder to 5,000 firms for posting on factory, store and office walls. Each poster deals with a symptom which may be a sign of cancer. Successive titles have been "Why Wait for Pain?", "Have You a Healthy Mouth?", "Can Cancer Be Prevented?", "Have You Indigestion?" and "Don't Hide Those Lumps!"

Personal.—Dr. John L. Rice, New York, former health commissioner of the city, was elected president of the Public Health Association of New York at the annual meeting June 2. ——Dr. Oswald T. Avery, New York, emeritus member of the Rockefeller Institute for Medical Research, received the honorary degree of Doctor of Science at New York University, New York, June 11. The citation read, in part, "pioneer in the chemistry of immunology, whose laboratory conquests have quelled the ravages of . . . pneumonia."

OHIO

Illegal Practitioners.—Found guilty of practicing illegally in Bowling Green, Belle Urban and LaVerne Lemans were each fined $400, with $375 of each fine suspended by the Justice Court of E. E. Bailey in Wood County, on condition that they leave the state. Two unlicensed practitioners, W. R. King and William A. Pierzchala, recently convicted in the Toledo Municipal Court, paid fines after their conviction was suspended by the Court of Common Pleas of Lucas County.

State Health Director Resigns.—Dr. Roger E. Heering, director of the Ohio Department of Health, has resigned to enter private practice in Columbus. In his resignation he pointed out the failure of the general assembly to provide adequate funds for the operation of essential functions and activities in the health department. According to the *Ohio State Medical Journal* the federal government has been giving the Ohio Department of Health twice as much money for current operation as the amount appropriated by the state.

OREGON

Dr. Livingston Heads Department of Surgery.—Dr. William K. Livingston, formerly of Portland, now guest professor at New York University Medical School, New York, will become head of the department of surgery at the University of Oregon Medical School, Portland, August 1, to succeed the late Dr. Thomas M. Joyce. A graduate of the University of Oregon and Harvard Medical School, Boston, he did graduate work in surgery at Massachusetts General Hospital, Boston, and Lakeside Hospital, Cleveland. During World War II he served four years in the navy. He was discharged in 1946 with the rank of lieutenant commander.

PENNSYLVANIA

Society Election.—The Pennsylvania Academy of Ophthalmology and Otolaryngology has announced the following officers for 1947: Drs. Gilbert L. A. Dailey, Harrisburg, president; James J. Monahan, Shenandoah, president-elect; Benjamin F. Souders, Reading, secretary, and Bruce A. Grove, York, treasurer.

Health Poster Contest Reestablished.—The Medical Society of the State of Pennsylvania through its county medical societies has reestablished the annual health poster contest canceled during the war years. Posters submitted by school children in public, parochial and vocational training schools in the state are to illustrate some phase of preventive medicine or general health as related to the family doctor. They will be judged by each component county medical society, and winning posters will be displayed at the annual session of the society in October 1948. Fifteen county societies have already expressed their willingness to conduct elimination contests.

Pittsburgh

Retires as Editor of Pittsburgh Bulletin.—Dr. Walter F. Donaldson, editor of the *Pittsburgh Medical Bulletin* since 1928, retired following the June 28 issue and will be succeeded in that position by Dr. Norman C. Ochsenhirt.

RHODE ISLAND

State Medical Election.—At the annual meeting of the Rhode Island Medical Society in May Dr. Arthur H. Ruggles, Providence, became president, Drs. Isaac Gerber, Pawtucket, vice president; Joseph C. O'Connell, Providence, president-elect; Morgon Cutts, Providence, secretary, and Charles J. Ashworth, Providence, treasurer.

TEXAS

Narcotic Violation.—Dr. Simon I. Dixon, 106 Pacific, Longview, Texas, was convicted in the State Court of Texas of violation of the "Uniform Narcotic Drug Act of Texas" and on April 14 was sentenced to serve a term of two years in the state penitentiary.

Singleton Memorial Fund.—In honor of the late Dr. Albert Olin Singleton, professor of surgery, the University of Texas Medical Branch, Galveston, a special fund has been created for the support of the work of the surgical department at the university. Contributions to the fund may be sent to the librarian of the University of Texas Medical Branch, Galveston.

New Surgical Society.—This recently organized society "to further and maintain high quality and standards among practicing Houston surgeons, to promote scientific knowledge in surgery and to stimulate advanced training in this specialized field" has elected Dr. Henry A. Petersen president, Dr. George W. Waldron vice president, Dr. Granville Q. Adams secretary and Dr. Thomas H. Compere treasurer.

Personal.—Dr. Charles M. Pomerat, professor of anatomy at the University of Texas Medical Branch, Galveston, has gone to Europe as a representative of the Tissue Culture Committee of the National Research Council to attend the International Cytology Congress in Stockholm and the International Physiology Congress in Oxford. While in England, Dr. Pomerat will spend some time in research at the Strangeways Laboratory, Cambridge, with Dr. Honor B. Fell.

Gift for Student Center Building.—The Southwestern Medical Foundation, Dallas, has received a gift of $100,000 for the construction of a student center building as a memorial to the late J. A. Skillern, founder of the Skillern Drug Stores. The gift was made in the name of Mr. and Mrs. Rae E. Skillern and family and the Skillern organization. In making public his contribution, Mr. Skillern said the grant was given in sincere appreciation of his firm's long and pleasant association with the medical and pharmaceutical professions, to whose service his organization is primarily dedicated. Dr. Edward H. Cary, Dallas, president of the Southwestern Medical Foundation, who was informed of the Skillern gift while in Atlantic City attending the Centennial Session of the American Medical Association, stated that the contribution further evidenced the support Mr. Skillern has always given the foundation and its program of advancing medical education and scientific research in the Southwest. "A central student building," he said, "is one of the finest facilities that could be provided for the medical center."

WASHINGTON

Dr. Seelye Appointed Acting Executive Officer.—Dr. Walter B. Seelye, Seattle, has been appointed clinical professor of pediatrics and acting executive officer of the department at the University of Washington School of Medicine beginning July 1. He is a graduate of Harvard Medical School, Boston, and has practiced his specialty in Seattle since 1930.

WEST VIRGINIA

Cancer Control.—The division of cancer control of the state department of health has accepted a total of 1,375 referrals per month, and it is expected that they will increase during the last half of the year. The division has found it impossible to meet the increased cost of hospitalization during the past year. Financial assistance can be extended only to the needy cancer patients who present a good prognosis. The division cannot authorize prolonged hospitalization to incurable cases or assume any financial obligation for treatment or hospitalization of a case until the application has been reviewed and the authorization issued. Services and treatment can be given only at approved treatment centers and tumor clinics. Another source of referral of needy cases has been established through the West Virginia Cancer Society's information centers at Charleston, Clarksburg, Wheeling and Bluefield The division of cancer control also assists in an educational campaign, aids in establishing tumor clinics and provides tissue diagnostic service for needy cancer patients. A binder of cancer bulletins, compiled by the committee on cancer of the Illinois State Medical Society and purchased by the division in West Virginia, will be distributed to all doctors in this state. This literature may be obtained without charge by writing to the Division of Cancer Control, State Department of Health, Charleston.

WISCONSIN

Society News.—At the recent annual meeting of the Wisconsin State Urological Society at Madison Drs. Sidney J. Silbar was elected president, N. Warren Bourne vice president and Charles R. Marquardt secretary-treasurer, all of Milwaukee.

Stovall Award Created by Cancer Society.—The creation of a special award honoring Dr. William D. Stovall, president-elect of the Wisconsin State Medical Society, director of the State Laboratory of Hygiene and former president of the Wisconsin Division of the American Cancer Society, was recently announced by the state division of the society and its lay organization, the Field Army. The award of $250 will be given annually to a Wisconsin resident student at the University of Wisconsin whose primary academic interest is related to cancer. The grant is created as a tribute to Dr. Stovall for many years of faithful service to the organization and in recognition of his accomplishments in developing a public consciousness of malignant growths. The first award was made at a dinner in Madison on May 26 to Mr. Myrton C. Rand, a veteran enrolled in biochemistry.

PUERTO RICO

The Hospital Program.—The financial program recommended by the planning board of Puerto Rico, now approved by the governor and the insular legislature, contemplates an investment of $36,450,000 in new hospitals during the next five years. The hospital survey and construction act, which has been extended to this territory for the construction and enlargement of public and private hospitals, will eventually give Puerto Rico a total appropriation of $12,150,000 over a period of five years. To qualify for this aid the insular government and nonprofit institutions in Puerto Rico would have to provide not less than $24,300,000, according to the financial program. In recommending its program the planning board of this island left a margin of $3,785,000, or 30 per cent of possible federal aid, to be utilized by nonprofit institutions in the construction of new hospital facilities. Allocations of insular funds amounting to $18,230,000 for a five year program to qualify for federal aid is being recommended. Of this amount the legislature voted enabling acts in 1945 and 1946 amounting to $7,165,500. During the current regular session of this body appropriation bills have already been approved to provide the remainder of these insular funds.

GENERAL

Seek Funds to Place Bust in Hall of Fame.—The Society of Tropical Medicine is seeking funds to place the bust of Walter Reed, who led the successful battle against yellow fever, in the Hall of Fame at New York University, to which he was elected Nov. 1, 1945. The university does not have the necessary financial resources. The cost of this work is fixed at $6,000.

Traffic Deaths in Four Months.—In a report on traffic deaths, the National Safety Council, Chicago, said that the death toll was 9,250 for the first four months of 1947. For the four months, the largest city with no traffic deaths was New Bedford, Mass., with a population of 110,300. The second largest was Schenectady, N. Y. (87,500), and Quincy, Mass., (75,800) was third. As the nation enters the vacation season, safer walking and driving were urged by the Council.

American Physiotherapy Association.—This association will hold its annual conference at the Asilomar, Pacific Grove, Calif., July 6-12. Functional anatomy will be under discussion Wednesday, Thursday and Friday with Dr. Verne T. Inman, University of California, San Francisco; Dr. Charles L. Lowman, Orthopaedic Hospital, Los Angeles; Irving Rehman, Ph.D., University of Southern California, and Signe Brunnstrom, M.A., A. P. A., as speakers.

French Periodicals Available for Distribution.—The cultural services of the French embassy have received a collection of recent French periodicals on medical topics intended for free distribution to certain centers throughout the United States, preference being given to college and research libraries, public libraries and special reviews. The number of copies is limited, and requests will be filled in the order in which they are received. A list of available publications will be sent on written request, which should be addressed to Librarian, French Embassy, Cultural Services, 934 Fifth Avenue, New York 21.

World Health Organization.—The Interim Commission has appointed Dr. Thorstein Guthe, formerly assistant to the surgeon general of public health of Norway, to the secretariat as a specialist in venereal disease. Dr. Guthe, a graduate of the University of Oslo, has studied also in London, Paris and Rochester, Minn., and recently completed a year's study at Johns Hopkins University School of Hygiene and Public Health as a fellow of the Rockefeller Foundation. The Committee on Tuberculosis of the association will meet July 30 in Paris; among those on the committee will be Dr. Herman Hilleboe, Washington, D. C., assistant surgeon general, U. S. Public Health Service.

The first meeting of the Expert Committee on Biological Standardization was in Geneva, Switzerland, June 9. The committee is seeking to assure more effective treatment of disease through the use of drugs, serums and vaccines of tested and uniform value. Among those on this committee is Dr. Milton V. Veldee, chief, Biologics Control Laboratory, National Institute of Health, Bethesda, Md.

Special Society Elections.—The new officers of the New England Dermatological Society are Drs. Francis M. Thurmon, Boston, president; Francis P. McCarthy, Boston, vice president; G. Marshall Crawford, Brookline, Mass., secretary, and Mildred L. Ryan, Brockton, Mass., treasurer.——At the recent meeting of the American College of Physicians, Dr. Walter W. Palmer, professor of medicine, Columbia University College of Physicians and Surgeons, New York, was chosen president. Drs. Reginald Fitz, Boston; Francis G. Blake, New Haven, Conn., and Charles T. Stone, Galveston, Texas, were chosen vice presidents.——At the annual meeting of the Medical Library Association, Cleveland, May 27-29, Mrs. Eileen R. Cunningham, Vanderbilt University Medical Library, Nashville, Tenn., was elected president; Miss Janet Doe, New York Academy of Medicine Library, New York, vice president; Dr. Howard Dittrick, Cleveland Heights, Ohio., director, Dittrick Museum of Historical and Cultural Medicine, honorary vice president; Miss M. Edna M. Poole, librarian, Academy of Medicine, Toronto, Canada, secretary.

Large Increase in Births.—In the first quarter of 1947 about 973,000 births were registered in the United States, according to estimates released by the Office of Vital Statistics, U. S. Public Health Service. This is 46.5 per cent more than the 664,000 births estimated to have been registered in the first three months of 1946, and 29 per cent more than the number recorded in the first quarter of 1943, the year which held the previous record number for births. Deaths in this country are estimated to have totaled 388,000 in the first three months of 1947, the same estimated number as that for the first quarter of 1946. The mild epidemic of influenza and other respiratory infections in 1946 increased the number of deaths in January over the number recorded in nonepidemic years. In 1947 influenza increased in March. The provisional death rate for March was higher than for March in any year since 1943. For the first quarter of 1947 the death rate on a cumulative basis was 11.0, or 0.1 per cent less than the comparable rate of 11.1 death per thousand of population (excluding the armed forces overseas) for the first quarter of 1946

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S Public Health Service as follows.

	Week Ended			Total to		Total *	
Division and State	June 21, 1947	June 22, 1946	Median, 1942 1946	June 21, 1947	June 22, 1946	Mar 16 June 21, 1947	Mar 17 June 22, 1946
New England							
Maine	0	0	0	6	2	3	2
New Hampshire	0	0	0	5	2	1	1
Vermont	0	0	0	8	7	0	3
Massachusetts	0	0	0	8	7	1	3
Rhode Island	1	0	0	4	0	3	0
Connecticut.	1	2	2	7	12	4	4
Middle Atlantic							
New York	4	7	7	75	89	59	86
New Jersey.	1	4	1	16	16	10	10
Pennsylvania	0	1	1	18	28	4	16
East North Central							
Ohio	2	2	2	18	2	8	17
Indiana	2	2	6	20	14	4	9
Illinois	3	12	3	42	48	20	10
Michigan	1	0	1	55	12	11	4
Wisconsin	0	1	0	24	15	0	2
West North Central							
Minnesota	4	1	1	23	11	10	10
Iowa	1	1	0	16	25	8	16
Missouri	0	1	1	21	14	11	7
North Dakota	2	2	0	18	3	15	3
South Dakota	0	0	0	2	0	0	0
Nebraska	5	1	0	24	5	17	2
Kansas	0	7	1	19	28	1	24
South Atlantic							
Delaware	0	0	0	1	1	1	1
Maryland	1	0	0	10	4	4	2
Dist of Columbia	0	0	0	5	1	1	0
Virginia	0	0	0	15	9	5	3
West Virginia	0	1	0	4	7	0	4
North Carolina.	1	4	1	20	29	5	22
South Carolina	0	1	1	4	10	5	7
Georgia	2	4	1	15	23	6	15
Florida	0	34	1	45	261	20	12
East South Central.							
Kentucky	1	2	1	13	16	12	13
Tennessee	1	0	1	17	12	5	3
Alabama	2	16	5	22	91	9	88
Mississippi	0	4	2	22	55	5	18
West South Central.							
Arkansas	1	1	2	18†	19	8	7
Louisiana	1	8	7	29	59	11	40
Oklahoma	0	5	3	16	29	5	23
Texas	3	44	6	66	240	41	212
Mountain							
Montana	0	0	0	2	23	0	7
Idaho	0	0	0	13	0	5	0
Wyoming	1	0	0	4	1	1	0
Colorado	5	11	2	15	57	8	56
New Mexico	0	3	0	5	14	2	13
Arizona	2	0	0	11	6	8	3
Utah	0	1	1	5	9	0	3
Nevada	0	0	0	0	0	0	0
Pacific.							
Washington	6	2	0	22	53	14	20
Oregon	1	1	0	9	5	4	1
California	23	18	9	313	197	164	110
Total	70	204	..	1,124†	1,579†	513	1,112
Median, 1942-1946	..	.	125	894		502	

* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21)

† Figures changed by corrected reports

Association for the Study of Internal Secretions.—This organization has announced the following awards: The Squibb Award for 1947 has been conferred on Dr. Carl F. Cori and Gerty T. Cori of Washington University, St. Louis, for contributions on the role of hormones in metabolism. The interrelation of hormones and enzymes has been brought into the realm of quantitative chemistry by their brilliant investigations Dr. Cori was also recently awarded the Intermediate Research prize of $5,000 for distinguished achievement in the field of human metabolism by the National Science Fund of the National Academy of Sciences (The Journal, May 31, p 473). The Ciba Award for 1947 has been given to Choh Hao Li, Ph D., of the University of California for his contributions in the separation of hormones of protein nature and the isolation of the growth and adrenocorticotrophic hormones in purified form. The Ayerst, McKenna and Harrison Fellowship for 1947 is awarded to Dr. Samuel Dvoskin of Columbia University College of Physicians and Surgeons, New York, to enable him to continue his studies on the thyroid gland and thyroid hormone assays at Columbia University.

National Board Announces Policy.—The American Board of Obstetrics and Gynecology, in annual session at Pittsburgh June 1-7, announced the following statement of policy "It was never intended by this board that certification should be required by any hospital as a prerequisite to appointment in various staff positions, even though certification or its full equivalent is considered a desirable requisite to appointment in key positions, as on the senior or chief staff, especially of hospitals expecting to conduct approved services for training of residents

"This board does not subscribe to any hospital or medical school rule that certification is to be required for medical appointments in ranks lower than chief of senior staff of hospitals, or associate professorship in schools of medicine, for the obvious reason that such appointments constitute desirable specialist training."

The board also adopted certain changes in regulations as follows·

"Candidates will be hereafter required to present not merely a fundamental knowledge of both branches of the specialty but evidence of actual adequate training in obstetrics and gynecology Credit for graduate courses in the basic sciences which involve laboratory and didactic teaching rather than clinical experience or opportunities will be given credit for the time spent up to a maximum period of not more than six months regardless of the duration of the course"

CORRECTIONS

Charles R. Glenn.—The award of the Legion of Merit noted in The Journal, June 28, page 809, was to Brigadier General Charles R Glenn rather than to Brigadier General Thomas R Glenn General Glenn entered the military service May 3, 1917.

International Spanish Speaking Physicians.—The address of the general secretary of this group, Dr William B P. McDonough, is 1065 Lexington Avenue, New York, rather than 161 East 81st Street, as mentioned in The Journal, June 14

Marriages

Henry Furman Hall Jr, Columbia, S C, to Mrs Ruby Wright Wilson of Fort Bragg, N C, January 24

Albert Lanham Allen, Knoxville, Tenn, to Miss Julia Hodgkin Winn in Orangeburg, S C, March 4

George V Teter Jr, Fort Wayne, Ind, to Miss Mildred Bradshaw of Carbon in Brazil January 18

John Vardaman Gwin to Mrs Sue McQuiddy Bauman, both of Chattanooga, Tenn, Dec 14, 1946.

Louis Donald Tellerman, Chicago, to Miss Nancy Carolyn Bearden of Charlotte, N. C, Dec. 7, 1946

Theodore Tilghman Herring to Miss Jean Corbett Brunson, both of Wilson, N. C, January 11.

Horace D Atkinson to Mrs Pauline H. Hildebrand, both of Lakeland, Fla, in February

Thomas Monroe Wiley Jr to Miss Jane Hearon, both of Birmingham, Ala, March 13

Quentin P. Hamilton, Detroit, to Miss Josephine Warner of Davison, Mich, recently.

William A Graber to Miss Loretta Jane Stapleton, both of Chicago, March 17.

Morris Gottlieb to Miss Theo Dunkelman, both of Atlanta, Ga., January 19.

Max Weis Jr to Miss Bettie Schwab, both of Memphis, Tenn, January 5.

James A. Valone to Miss Ethel Fielder, both of Atlanta, February 4.

Deaths

Frank Dwyer, Bellingham, Wash.; College of Physicians and Surgeons, Baltimore, 1913; member of the American Psychiatric Association; veteran of the Spanish-American War and World War I; served at various times as clinical director and assistant superintendent of veterans' hospitals in Philadelphia, Coatesville, Pa., Northampton, Mass., Kecoughton, and Roanoke, Va., and Togus, Maine; served on the staffs of the East Louisiana State Hospital at Jackson, La., Mendocino State Hospital in Talmage, Calif., state hospitals at Warm Springs, Mont., Yankton, S. D., Fort Steilacoom and the Northern State Hospital in Sedro-Woolley, Wash.; died March 30, aged 67, of chronic myocarditis and arteriosclerosis.

Edward Boynton Angell ⊕ Rochester, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1881; in 1908 member of the House of Delegates of the American Medical Association; a founder and past president of the Rochester Academy of Medicine; served as vice president of the American Neurological Association and the Medical Society of the State of New York; member of the Association for Research in Nervous and Mental Diseases, on the honorary medical staff of the Rochester General Hospital and on the staff of the State Hospital; died in the Julia L. Butterfield Memorial Hospital, Cold Spring, April 23, aged 90, of cerebral hemorrhage.

Alfred Morrell Bidwell ⊕ Tampa, Fla.; Columbia University College of Physicians and Surgeons, New York, 1915; Army Medical School, 1918; vice president of the Hillsborough County Medical Society; past president of the Florida Association of Industrial Surgeons; formerly instructor in surgery at his alma mater and attending surgeon at the Vanderbilt Clinic in New York; served in France during World War I and later as a captain in the regular army; at one time assistant surgeon in the U. S. Public Health Service; on the staffs of St. Joseph's Hospital and the Tampa Municipal Hospital, where he died April 12, aged 58, of coronary occlusion.

Arthur Warren Hayes ⊕ Greenfield, Mass.; Middlesex College of Medicine and Surgery, Cambridge, 1920; specialist certified by the American Board of Radiology; member of the New England Roentgen Ray Society, Radiological Society of North America and the American College of Radiology; for many years member and chairman of the board of health; an associate examiner for the draft board during World War II; on the staffs of the Franklin County Hospital in Greenfield and the Farren Memorial Hospital in Montague City, where he died March 11, aged 56, of cerebral hemorrhage.

Frances Morton Allen, San Diego, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1896; member of the American Medical Association; for many years on the staff of St. Joseph's Hospital, now known as the Mercy Hospital; formerly a member of the city board of health; at one time practiced in Chicago, where she had been on the faculty of the College of Physicians and Surgeons and on the staff of the Lakeside Hospital; died April 13, aged 79, of burns received when her clothes ignited as she attempted to light a stove.

Zachry Martin Abshear, Hazard, Ky.; Hospital College of Medicine, Louisville, 1902; on the staff of the Hazard Hospital; died in the Veterans Hospital in Louisville April 20, aged 73, of arteriosclerosis.

William Carlton Adams, East Taunton, Mass.; Baltimore Medical College, 1896; died March 29, aged 71, of arteriosclerotic heart disease.

Alfred L. Arnold, Owosso, Mich.; Detroit College of Medicine, 1886; member of the American Medical Association; served as mayor; on the staff of the Memorial Hospital; formerly president of the State Savings Bank; died April 19, aged 89, of cerebral hemorrhage.

John Louis Asselin, Detroit; Detroit Homeopathic College, 1906; member of the American Medical Association; for many years on the staff of the Grace Hospital, where he died February 24, aged 67.

Porter Guy Bowen ⊕ San Antonio, Texas; University of Texas School of Medicine, Galveston, 1919; died February 12, aged 55, of cirrhosis of the liver.

William Walker Brandau, Dallas, Texas; Jefferson Medical College of Philadelphia, 1900; member of the American Medical Association; died February 4, aged 75, of intestinal obstruction.

Martin T. Brewer, Des Moines, Iowa; Rush Medical College, Chicago, 1896; served during World War I; major, medical reserve corps, not on active duty; formerly mayor of De Soto, where he had been president of the board of education; died March 27, aged 74, of arteriosclerosis.

Frank H. Carlisle, Italy, Texas (licensed in Texas under the Act of 1907); member of the American Medical Association; died February 8, aged 77, of injuries received when the automobile in which he was driving was struck by a train.

Stark Outtlaw Cherry, Pittsburgh; Temple University School of Medicine, Philadelphia, 1910; died recently, aged 64, of coronary occlusion.

Lemuel E. Clark, Otsego, Mich.; Jefferson Medical College of Philadelphia, 1881; formerly village president and health officer; served on the staffs of the Highland Park (Mich.) General Hospital and the William Crispe Hospital in Plainwell, where he died March 15, aged 91, of senility.

Thomas Alonzo Clark, Memphis, Tenn.; Memphis Hospital Medical College 1907; died in St. Joseph Hospital March 31, aged 66, of intestinal obstruction and strangulated right inguinal hernia.

Robert Clanton Curtis, Calera, Ala.; Memphis (Tenn.) Hospital Medical College, 1901; member of the American Medical Association; local surgeon for the Louisville and Nashville Railroad Company; died in Sylacauga March 24, aged 76, of uremia.

Irving Taylor Cutter, San Antonio, Texas; Harvard Medical School, Boston, 1907; member of the American Medical Association; fellow of the American College of Surgeons; served during World War I; on the staffs of the Nix and Santa Rosa hospitals; died February 18, aged 67, of coronary thrombosis.

Burr E. Decker, Bradford, N. Y.; University of Vermont College of Medicine, Burlington, 1891; since 1920 health officer of Bradford; died March 21, aged 80, of congestive heart failure.

Charles Leslie Edgar, Cleburne, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1898; member of the American Medical Association; for many years local physician for the Santa Fe Railway; died in a hospital at Temple February 15, aged 74, of complications following a fractured leg incurred in a fall.

Horace Crandell Embry ⊕ Great Bend, Kan.; University Medical College of Kansas City, Mo., 1909; fellow of the American College of Surgeons; on the staff of St. Rose Hospital; died March 13, aged 68, of heart disease.

Gilbert S. Field, Detroit; Detroit College of Medicine, 1891; member of the American Medical Association; at one time on the faculty of his alma mater; died in Grosse Pointe Park, Mich., March 31, aged 79, of cerebral thrombosis and arteriosclerosis.

Charles C. Finney, Atchison, Kan.; Beaumont Hospital Medical College, St. Louis, 1894; served as mayor of Atchison and member of the city council; on the staff of the Atchison Hospital; died in Topeka, March 23, aged 82, of arteriosclerosis.

G. Theodor Fischer, New York; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1890; died March 8, aged 82, of arteriosclerosis.

Hugh Francis Fisher, Denver; the Hahnemann Medical College and Hospital, Chicago, 1884; University Medical College of Kansas City, 1905; died March 29, aged 84, of cirrhosis of the liver and adhesive pericarditis.

Gustav Henry Frederick, Newark, N. J.; College of Physicians and Surgeons, Baltimore, 1900; died in St. Mary's Hospital, Orange, March 18, aged 74, of chronic myocarditis, nephritis and arteriosclerosis.

Alexander Rutherford Freeman ⊕ Albany, Ga.; Emory University School of Medicine, Atlanta, 1929; interned at the Wesley Memorial Hospital, Emory University; formerly resident physician at the Peter Bent Brigham Hospital in Boston; on the staff of the Phoebe Putney Memorial Hospital; died March 29, aged 42, of cerebral hemorrhage.

George Hartley Gorham, Boston; Tufts College Medical School, Boston, 1903; member of the American Medical Association; died March 12, aged 76, of bronchogenic carcinoma.

William G. Hodges ⊕ Malvern, Ark.; American Medical College, St. Louis, 1912; president and formerly secretary of the Hot Springs County Medical Society; served as president of the state board of health, of which he had long been a member; for many years city health officer; died in St. Vincent's Hospital in Little Rock, March 22, aged 68, of cerebral hemorrhage.

Abby Virginia Holmes, Omaha, the Hahnemann Medical College and Hospital, Chicago, 1899, died March 1, aged 76, of hypostatic pneumonia

George L. Hubbell, Stamford, N Y , College of Physicians and Surgeons, Baltimore 1894, served as county coroner and on the staffs of the Aurelia Osborn Fox Memorial Hospital in Oneonta and the Bathgate Hospital, where he died March 17, aged 75, of cerebral hemorrhage

David Oliver King, Waterloo, Iowa, St Louis College of Physicians and Surgeons, 1909, died February 22 aged 67, of coronary occlusion

Eli Abraham Kusel ⊕ Oroville, Calif , Cooper Medical College, San Francisco, 1895, served as city health officer and for many years as district surgeon for the Western Pacific Railroad, died March 19, aged 72, of arteriosclerotic heart disease and hypertension

Burdette Dudley La Force, Pasadena, Calif , Rush Medical College, Chicago, 1893, fellow of the American College of Surgeons, died March 13, aged 77, of coronary thrombosis

Charles Fred McBurney, Altoona Pa , Jefferson Medical College of Philadelphia, 1897, formerly secretary of the Blair County Medical Society, served as a member of the board of health and on the examining board of the Selective Service during World War I and II, member of the staff of the Altoona Hospital, where he died March 18, aged 72, of heart disease

John Hestain McNutt, Hammond, Ill , Missouri Medical College, St Louis, 1895, served as county coroner, died March 12, aged 77, of cerebral hemorrhage

Harry Markowitz ⊕ Bellevue, Pa , Jefferson Medical College of Philadelphia, 1924, served during World War I, affiliated with the Suburban General Hospital, where he died March , aged 50, of heart failure

erbert S. Martyn ⊕ Cuttingsville Vt , Baltimore Medi olege, 1898, past president of the Rutland County Medical ociety, served as health officer and school director, on the courtesy staff of the Proctor (Vt) Hospital, where he died March 14, aged 75, of carcinoma of the pylorus

Joseph V. Maucher, Carrolltown, Pa , College of Physicians and Surgeons, Baltimore, 1885, died March 28, aged 81, of coronary occlusion

Ezra Gecovia Maxwell, Lexington, Tenn , University of Tennessee Medical Department, Nashville, 1900, member of the American Medical Association, served during World War I, formerly on the staff of various veterans' hospitals, died in the Doctors' Hospital in Jackson, March 20, aged 67, of congestive heart failure and arteriosclerosis

David John Moore, Dexter, Kan , University Medical College of Kansas City, 1892, member of the American Medical Association, on the staff of the Newton Memorial Hospital in Winfield, where he died March 11, aged 82, of aneurysm

Josiah George Moore ⊕ Pomona, Calif , St Louis Medical College, 1889, an Affiliate Fellow of the American Medical Association, fellow of the American College of Surgeons, member of the Missouri State Medical Association, formerly a member of the state house of representatives from Audrain County, Missouri, died March 4, aged 84, of uremia and arteriosclerosis

John Alfred Newnham ⊕ West Palm Beach, Fla , Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914, served during World War I, died in the Good Samaritan Hospital March 19, aged 58, of hemorrhage and arteriosclerosis

Harry Schuyler Nicholson, Pittsburgh, Hahnemann Medical College and Hospital of Philadelphia, 1896, served on the staff of the Shadyside Hospital, veteran of World War I, died in Winter Park, Fla , March 6, aged 77, of heart disease

William Blandine Nies, Fort Worth, Texas, Fort Worth School of Medicine, Medical Department of Texas Christian University, 1916, member of the American Medical Association, Texas Public Health Association, American Public Health Association and the Association of Military Surgeons of the United States, director of the Tarrant County Health Unit, died recently, aged 58, of heart disease

Clifford James Pittman ⊕ Ruleville, Miss , Memphis (Tenn) Hospital Medical College, 1911, served during World War I, died March 8, aged 58, of cerebral arteriosclerosis

Alonzo Thomas Powell, Coeymans, N Y , Albany Medical College, 1889, died in Albany March 8, aged 85, of generalized peritonitis

Harry Herman Rich, Newark, N J , University of Maryland School of Medicine, Baltimore, 1912, member of the American Medical Association, on the staff of the Beth Israel Hospital, where he died March 15, aged 61, of uremia

Charles Cogan Rinard ⊕ Homestead, Pa , Bellevue Hospital Medical College, New York, 1898, past president of the Allegheny County Medical Society member of the board of directors of the Monongahela Trust Company; on the staff of the Homestead Hospital, where he died March 15, aged 71, of aneurysm

Laetus Sanders, Commerce Ga , University of Georgia Medical Department, Augusta, 1897 served on the board of trustees of the State Hospital at Milledgeville, died March 16, aged 73, of myocarditis with congestive failure

Philip Skrainko, St Louis, St Louis Medical College, 1884, died in the Barnes Hospital March 8, aged 75, of coronary occlusion

David C. Stahlman, Potwin, Kan , Kansas City Medical College, 1900, member of the American Medical Association, served as a member of the board of education, died March 6, aged 80, of hypostatic pneumonia following cerebral hemorrhage

Walter Logan Stephenson, Aline, Okla (licensed in Oklahoma under the Act of 1908) member of the American Medical Association, died in St Anthony's Hospital in Oklahoma City February 25, aged 70, of pneumonia following a colostomy

Ethel B. Stribling, Rolling Fork, Miss , Memphis (Tenn) Hospital Medical College, 1901, died in Jackson March 8, aged 68, of heart disease

James Thurman Strimple ⊕ Erie, Pa , Jefferson Medical College of Philadelphia, 1912, served during World War I, for many years member of the board of health of Erie, formerly medical director of Erie County, attending surgeon at the Hamot Hospital and an associate member of St Vincent's Hospital, died March 16, aged 59, of hypernephroma of the right kidney with metastases

George D. Sturtevant, Cleveland, Homeopathic Hospital College, Cleveland, 1887, member of the Cleveland Academy of Medicine, served during World War I, died in February

John William Sugden ⊕ Salt Lake City, Rush Medical College, Chicago, 1923, fellow of the American College of Surgeons, lieutenant, medical corps, U S Naval Reserve, not on active duty, member of the senior staff of the Holy Cross Hospital, died in Phoenix, Ariz , March 19, aged 50, of congestive heart failure

Charles Hill Tait, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1906, died in the Mound Park Hospital, St Petersburg, Fla , March 2, aged 64, of coronary occlusion

Ira Abraham Tawney, Cleveland, Cleveland Homeopathic Medical College, 1903, died March 1, aged 66, of coronary thrombosis

Herbert William Todd, Galion, Ohio, Fort Wayne (Ind) College of Medicine, 1891, member of the American Medical Association, for many years surgeon for the Erie Railroad, director of the First National Bank, died in the Lee Memorial Hospital in Fort Myers, Fla , March 17, aged 75, of empyema of the gallbladder and cardiac decompensation

Burt Dexter Walker, Kalamazoo, Mich , University of Michigan Homeopathic Medical School, Ann Arbor, 1894, member of the American Medical Association and the Kalamazoo Academy of Medicine, on the staff of the Borgess Hospital, where he died March 10, aged 74, of carcinoma of the larynx and arteriosclerotic heart disease

Thomas Weston, Muir, Mich , Detroit College of Medicine, 1893, died in the Blodgett Memorial Hospital in Grand Rapids, March 15, aged 82, of myocarditis

Henry Kirke Wilson, Holbrook, Ariz , Northwestern University Medical School, Chicago, 1890, medical examiner for Selective Service during World War II, formerly affiliated with the Indian Service, died in Winslow recently, aged 73, of cerebral hemorrhage

Henry Mason Wilson ⊕ Peoria, Ill , College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1911, served during World War I and as medical examiner for city Selective Service Board number 3 during World War II, on the staffs of the Methodist Hospital and St Francis Hospital, where he died March 24, aged 59, of influenzal encephalitis and hypertension

Robert S Yancey ⊕ Dallas, Texas, Missouri Medical College, St Louis, 1897, fellow of the American College of Surgeons, member of the staff of the Baylor Hospital, visiting oculist, Parkland Hospital, division oculist, Frisco Railroad and St Louis and Southwestern Railway, chief oculist, Missouri, Kansas and Texas Railway, chief surgeon, Missouri, Kansas and Texas Railroad Employees' Hospital Association, died February 21, aged 74, of heart disease

Foreign Letters

PARIS

(From Our Regular Correspondent)

May 31, 1947.

Action of Folic Acid in Chronic Disorders

The substitution in a diet of saccharose for galactose or lactose (glucides of disequilibrium) produces nervous disorders similar to those brought about by B avitaminosis, but not curable either by yeast or by B vitamins. Chauchard, Mazoue and Lecocq have found that in these disequilibriums a diminution of the nervous chronaxia occurs and later an increase of the muscular chronaxia. They have studied the influence of folic acid on those disorders and reported their results at a meeting of the Society of Biology. They also studied the action of ascorbutic acid on the disequilibrium due to glucides It had no effect on chronaxic disorders accentuated by a diet providing 66 per cent of galactose, but it prevents them in the same way in which folic acid does in an attenuated diet providing 30 per cent of lactose in the rat and the pigeon; in the latter the supplementary factor of the yeasts does not appear necessary any more. These researches demonstrate that folic acid and ascorbutic acid are endowed with a preventive and curative power as regards the chronaximetric disorders in disequilibriums due to glucides, disorders which do not yield to most of the therapies.

Venereal Disease in France

The Bulletin of Epidemiologic Information of the Ministry for Public Health for February 1947 gives the following figures on venereal morbidity during the last two years:

Number of Cases Declared for Each Quarter

	Blennorrhagia		Primary and Secondary Syphilis		Fungating Chancre	
	1945	1946	1945	1946	1945	1946
First quarter	5,769	8,211	2,328	5,190	105	[illegible]
Second quarter	[illegible]	7,790	2,655	4,141	269	[illegible]
Third quarter	10,325	7,257	3,314	3,857	[illegible]	[illegible]
Fourth quarter	9,850	6,468	3,797	3,912	632	136
Totals	34,257	29,856	12,094	17,110	1,195	1,038

Note the decrease of the fungating chancre from 632 cases in the fourth quarter of 1945 to 136 for the same period of 1946. The 1945 increase was due to the influx of North Africa troops. The figures concerning syphilis and blennorrhagia are very high, four times prewar. A slight decline of the cases of blennorrhagia during the fourth quarter of 1946 is due to penicillin having been put at the disposal of practitioners. Some patients have been treated privately and have not been reported, the compulsory declaration of venereal diseases by private doctors being not yet adhered to by all practitioners. The closing of brothels, effected during 1946, has not yet appreciably modified the venereal morbidity. It is estimated in competent circles that, owing to the antivenereal action, the decreasing of the curve should accentuate in 1947.

The League of Red Cross Societies

The Red Cross Societies met in Paris May 21-23 at the International Office of Hygiene under the presidency of Mr. Basil O'Connor, chairman of the Executive Committee; thirty International Red Cross societies were represented, among which were the American National Red Cross, represented by J. T. Nicholson; the Alliance of the Red Crescent Societies of U. S. S. R., by Drs. Zabolotzkaya and Petrowsky, the British Red Cross by Sir John Kennedy, Mr. Hope and other personalities, and the French Red Cross by Ambassador Bargeton, Mr. Truchis de Varenne and others. A conference to take place in Belgrade and designed to assist the war victims of this region has been decided on; also a conference for the revision of the existing convention of Geneva with a view to wartime protection of the civil population. This question will also be placed on the agenda of an international Red Cross conference which is being prepared. As regards the transfer of the head office of the Red Cross, which was in Paris in prewar time and in Switzerland during the war, the question is still under study.

Ten Years of Anti-Scorpion Serum Therapy

At a recent meeting of the National Academy of Medicine, Professor Pasteur Vallery-Radot presented a communication from E. Sergent of the Pasteur Institute of Algeria on the result of ten years (1936 to 1946) of application of anti-scorpion serum therapy. There are fifteen kinds of scorpions in northern Africa, the most dangerous of them being Prionuris australis. For the preparation of anti-scorpion serum, horses submitted to malleinization and vaccinated against tetanus are used. Only the venom of Prionuris australis is used, the serum thus obtained being equally efficient against other northern Africa scorpion venoms. Without treatment, death generally occurs within two to twenty-four hours after the patient has been stung; if symptoms are at once serious, serum is to be injected as soon as possible (before the fourth hour). The doses are 20 cc. subcutaneously or intravenously for adults and 30 to 50 cc. for children, who are more responsive to the venom than adults. In alarming cases several hundred cubic centimeters of isotonic solution of sodium chloride is to be injected simultaneously in another part of the body. The author used serum in 2,209 cases. Out of 531 hopeless cases (134 were at the very point of death), 472 were cured. Protracted toxic phenomena being liable to occur, patients should be kept under observation for several hours and the treatment resumed should toxic symptoms reappear.

Personal

Elected as foreign correspondents to the National Academy of Medicine, second division (surgery, obstetrics, surgical specialties) were Allen Whipple, Wilder Benfield (New York), Sir Webb-Johnson (London), and Brouha (Liége).

BUENOS AIRES

(From Our Regular Correspondent)

April 15, 1947.

Surgeons Meet in Montevideo

At the Inter-American Congress of Surgery in Montevideo, more than five hundred surgeons of this continent were present. Dr. Alton Ochsner of New Orleans was especially invited. One of the official topics was "Fractures of Pelvis—Treatment and Complications." Drs. Giola, Jorge, Caffardo, Surraco and Lockhardt were speakers. Dr. Ramón Grau San Martin, the president of Cuba, sent an article on "Experimental Diet in Cancer," which was read by Dr. Antonio Glerch Rius, the head of the Instituto de Higiene of Havana.

Price of Drugs

Information given by the authorities on public health shows that the price of about one hundred and seventy-three specific drugs has been reduced in price. The authorities made studies on the expenses of production, showed the results of these studies to the manufacturers and asked them to establish more reasonable prices.

Women in Argentine Universities

Of a total of 21,052 students in universities at the end of 1945, there were 3,030 women. Medicine or its branches is studied by 1,373 at the Faculty of Medical Sciences of Buenos Aires.

New Medical Society

The Sociedad Argentina de Patologia Infecciosa y Epidemiologia was recently established. The president, vice president and general secretary are Drs. Julio Méndez, Carlos Fonso Gandolfo and Julio Hansen, all of Buenos Aires.

Correspondence

CONSTITUTIONAL APPROACH IN THE TREATMENT OF MALE INFERTILITY

To the Editor:—In THE JOURNAL, January 18, in an attempt to forestall useless endocrine therapy where it is not indicated, I wrote on "Endocrine Therapy in Male Sterility of Nonendocrine Origin Valueless." In THE JOURNAL, May 24, Dr. Laman A. Gray apparently took exception to my conclusion, terming it a "nihilistic point of view." Obviously Dr. Gray is a bit confused, since he writes that ". . . Dr. Abner I. Weisman indicated in a communication to the editor that no endocrine therapy was of any value in the treatment of male sterility." If my critic will reread the original correspondence carefully, he will find that I laid particular stress on the inefficacy of endocrines in male sterility of nonendocrine origin.

Secondly, where glandular therapy is indicated and of proved worth I strongly urge its use. On page 234 of my monograph Spermatozoa and Sterility (New York, Paul B. Hoeber, Inc., 1941) one will find the following statement: "In cases where the basal metabolic rate is low, the administration of thyroid gland extract, together with constitutional treatment, has restored fertility to many patients." Certainly, in view of our progress in this field, no thinking physician would preclude thyroid therapy from the individual of hypothyroid tendency who manifests spermatozoal inadequacy. In fact, thyroid extract, of all the endocrine substances, does offer some males their only ray of hope in the glandular approach to therapy.

Since 1942 and in his recent communication to THE JOURNAL, Dr. Gray appears to be highly enthusiastic of the value of gonadotropic substances (particularly equine gonadotropin, gonadogen, Upjohn) in male infertility. He reports better than 50 per cent improvement with this substance. Most investigators unhesitatingly resort to the use of gonadotropic hormones in youths and adolescents with undescended testes, hypogonadism and juvenile Froelich's syndrome. On the other hand, these same authorities (and the list of names is too long to include) have had little effect in the relatively infertile male adult with any of the gonadotropic substances. In fact, back in 1940 I conducted a controlled series of experiments with subnormal males using the same commercial product as did Dr. Gray, which was supplied to me in large quantities by the same manufacturers, and found no definite improvement in semen counts, aside from the variable transient rises and falls which are normally found in semen counts. Therapy with gonadogen was disappointing.

Thirdly, I should like to point out at this time that much can be done to improve the semen output of the male who is of lowered fertility. The outlook for the male whose fertility is not within the normal range is not too depressing if the physician handling the case will treat the individual as a constitutional entity. In supervising the "husband regimen" of hundreds of males and personally analyzing their semen specimens, I am happy to state that there is improvement in spermatozoal output in practically every instance if the patient abides conscientiously by his physician's advice. In treating the male as a constitutional individual rather than as a man who simply possesses testes, most incredible results are obtained. Every effort should be made first to ascertain any underlying physical defect. Similarly, the physician should delve into the patient's psychologic make-up. His general health, his overwork, his lack of rest or sleep, his nervous exhaustion, his improper diet, his mode of life, his occupation, his frequency of sexual relationship—all should be gone into.

A "husband regimen" devised along the lines of improving that particular individual should be worked out. He should be advised concerning his diet—the type of food, the method of cooking his food, the vitamin and mineral-containing foods, and so on. He should be informed about the need for a well regulated mode of living—hours of sleep, proper amount of rest and relaxation, avoidance of excessive physical or emotional strains. He should be told of the deleterious effect of excessive coitus, of excessive uses of alcohol, of overindulgences in general. In essence, the patient who desires to increase his chances of impregnation should be told to care for himself in much the same way as an experienced animal husbandryman cares for a prize bull or sire. There is no question of doubt that in all the laws of breeding the individual who is the most normal and healthy will be able to produce the very best sperm output that he, as an individual, can manufacture.

If the physician treating marital infertility will stress the importance of the constitutional factors in relation to fertility he will find that he will be obtaining a far greater percentage of pregnancies than the one or two which Gray reported in 1942 following the use of gonadogen.

ABNER I. WEISMAN, M.D., New York.

CRUSH SYNDROME

To the Editor:—In reference to the paper by Drs. Corcoran and Page (THE JOURNAL, May 31) it might be of interest to note that during the investigations carried out by the United States Strategic Bombing Survey in Germany in the recent war cases of crush syndrome were encountered in every German city that had been bombed (The Effect of Bombing on the Health and Medical Care in Germany, U. S. Strategic Bombing Survey, War Department, Washington, D. C., Oct. 30, 1945). Thus, one pathologist in Hamburg saw 50 cases in his hospital alone. German scientists referred to the syndrome as decompression shock (entlastungskollaps). It is noteworthy that in several instances victims of crushing injuries were reported to be at home or in hospitals for several days before the signs and symptoms of shock appeared. German air defense medical officers estimated that the mortality of this condition throughout Germany was around 90 per cent and that the remainder recovered without permanent damage to their kidneys. As a matter of fact, most clinicians interviewed were surprised how quickly kidney function returned to normal in some patients with the crush syndrome.

FRANZ K. BAUER, M.D., Los Angeles.

SMALLPOX VACCINATION

To the Editor:—I have your letter asking about a statement made by Walter Winchell that there had been more deaths from vaccination than from smallpox. When Winchell made this statement, he emphasized the fact that it was entirely unofficial. You realize, of course, that in any undertaking as extensive as that of vaccinating over 6,000,000 people, there are bound to be rumors. In New York City there are some 200 deaths a day. Obviously, some of these deaths must occur in people who were recently vaccinated, since practically the entire population of the city was vaccinated. Some people were confusing "death following vaccination" with "death on account of vaccination."

Dr. Rivers feels that a diagnosis of death due to post vaccinal encephalitis cannot be confirmed unless there has been an examination of brain tissue. In 2 cases in which such a diagnosis had been made, autopsy revealed entirely different causes of death.

There have been a number of cases of serious illness and a few deaths which physicians thought might be related to the vaccination. A careful investigation has been made of each case. To date we have no evidence of any death due to vaccination. We shall continue to investigate every case that is brought to our attention.

ISRAEL WEINSTEIN, M.D.
Commissioner of Health, City of New York.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Pardon Does Not Restore Right to Practice Medicine.—The defendant was convicted of practicing medicine without a license, the information charging him with making a diagnosis of one Lewis Janczak as having kidney trouble, with prescribing for said supposed kidney trouble a large quantity of distilled water and with maintaining an office equipped with stethoscope, blood pressure apparatus, examining table, sterilizing cabinet and other equipment. From such conviction, which was affirmed by the Appellate Court, the defendant appealed to the Supreme Court of Illinois.

Among other contentions, the defendant claimed a right to practice medicine because he had been given a pardon by the governor for a prior conviction of manslaughter. It was argued that this restored his rights of citizenship which the conviction had forfeited, including the right to practice medicine. No authorities, said the Supreme Court, are cited by either side as to the effect of a pardon on the rights of a person to engage in a profession, which rights had been forfeited by a prior conviction, nor have we found that the point has been passed on in this state. Two prior Illinois cases have held that an attorney might be disbarred because of conviction of crime involving moral turpitude, notwithstanding the granting of a pardon prior to the institution of disciplinary proceedings. The question of restoration by pardon was not involved, however. In a Florida case, the Supreme Court continued, it was held that an attorney at law was not restored to the right to practice law because he had been pardoned for the offense which had resulted in his being disbarred; and a Washington case held that the pardon of a physician does not restore the right to practice medicine, although it purports to restore all rights and privileges forfeited by the conviction. In the latter case, the court said, "There is a wide distinction between the right which one, whether felon or free, has to hold his own property against the world, and deny even the state the right to take it from him without compensation therefor, and that other right to practice a profession which demands peculiar qualifications in order to protect the public, and requires a license." If a pardon had the effect claimed by the defendant, many persons who have obtained divorces because their spouses had been convicted of a felony would find themselves in an embarrassing position. We are satisfied, the Supreme Court concluded, such pardon does not have the effect claimed by the defendant. Accordingly the judgments of the County and Appellate courts were affirmed.—*People v. Rongetti, 70 N. E. (2d) 568 (Ill., 1946)*

Malpractice: Death Resulting From Allergy to Ether.—The plaintiffs sued for damages for the death of their daughter, which occurred while she was under an anesthetic during an operation being performed by the defendant physician. From a judgment for the defendant, the plaintiffs appealed to the Supreme Court of Washington.

The defendant physician had advised the plaintiffs that their child's visual defect could be remedied only by a surgical operation, so they took the child to the hospital for such purpose. She was given the usual preoperative tests and taken into the operating room at 10:30 the following morning. The anesthetic, ether, was administered by a nurse anesthetist in the employ of the hospital. The defendant commenced the operation at 10:45 a. m. Nothing untoward occurred until approximately 12:10 p. m., when both the defendant and the nurse noticed that the child had become cyanotic, that is, had taken on a bluish discoloration indicating a stoppage of breathing. The defendant immediately stopped the operation and began efforts to resuscitate her. Other doctors were called in to assist, but all efforts were in vain. An autopsy later revealed that the death was caused by an allergy to ether of the child's thymus gland. According to the evidence there is no known test to ascertain the presence of such an allergy prior to the administration of the ether.

The only evidence of negligence which the plaintiffs produced was the following testimony by the child's mother: "Q. After the operation and after you were told of the death of Barbara Jean, did you talk to Dr. Dunnavan? A. After a while yes. We called him out. Q. What did you say to him at that time? A. I accused him of being careless, not giving her the proper examination. Q. Did he say anything in answer to your question? A. He says 'You are right, Mrs. Yeager.'" On appeal the plaintiffs contended that the trial court erred in refusing to submit the case to the jury on the basis of the foregoing evidence.

The Supreme Court said "(4) Before a physician or surgeon can be held liable for malpractice he must have done something in the treatment of his patient which the recognized standard of medical practice in his community forbids in such cases or he must have neglected to do something required by those standards. . . . (8) Negligence on the part of the physician or surgeon by reason of his departure from the popular standard of practice must be established by medical testimony." In the instant case, the Supreme Court pointed out, it was not shown that there was any negligence which was the proximate cause of the unfortunate death. Indeed, the evidence shows affirmatively that the death resulted from an independent cause, that is, an allergy, which was unforeseeable. Accordingly the Supreme Court held that the trial court had not erred in refusing to submit the case to the jury and in directing a judgment of nonsuit. Accordingly the judgment in favor of the defendant was affirmed.—*Yeager v. Dunnavan, 174 P. (2d) 755 (Wash., 1946).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL June 28, page 827.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* September. *Part III.* Durham, Oct. 21-23. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Part II. *Oral.* Cleveland, Oct. 5-11. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Part I. Oral.* Chicago, Oct. 24-26. Final date for filing application is Aug. 1. *Part II. Written.* Various centers, Sept. 15. Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, Oct. 8-10. Asst. Sec., Dr. W. A. Werrell, 1 West Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I. Written.* Various Centers, Feb. 6. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, October 6-12. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Part II. Chicago, Jan. 22-23. Final date for filing application is Sept. 15. Sec., Col. F. M. McKeever, 1136 W. Sixth St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 7-11. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 24-25. Final date for filing application is Sept. 15. Sec., Dr. Robert A. Moore, Euclid Ave. and Kingshighway, St. Louis 10.

AMERICAN BOARD OF PEDIATRICS: Dallas, Dec. 5-7. Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Applications should be sent to Sec., Dr. Louis T. Byars, 508 N. Grand Blvd., St. Louis.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Final date for filing application is Sept. 15. Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Boston, Nov. 26-30. Final date for filing application is Aug. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Avenue, S. W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Harry Culver, 1409 Willow St., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

45:123-258 (March) 1947

Control of Anopheles Pseudopunctipennis in Mexico with DDT Residual Sprays Applied in Buildings. J. B. Gahan and G. C. Payne.—p. 123.
Effectiveness of DDT Residual House Sprays in Controlling Anopheles Quadrimaculatus. A. D. Hess and G. G. Keener Jr.—p. 133.
Antigenic Composition and Effect of Various Extracts of Trypanosoma Equiperdum and Trypanosoma Lewisi on the Leukocyte Picture in Experimental Trypanosomiasis. O. Ikejani.—p. 144.
Diagnosis of Schistosomiasis Japonica by Means of Intradermal and Serologic Tests. W. H. Wright, J. Bozicevich, F. J. Brady and P. M. Bauman.—p. 150.
Epidemiology of Schistosomiasis Japonica in Philippine Islands and Japan: Surveys for Schistosomiasis Japonica on Mindanao, Philippine Islands. W. H. Wright, D. B. McMullen, E. Carroll Faust and P. M. Bauman.—p. 164.
Effect of Insulin on Plasmodium Lophurae Infection in Ducks. R. H. Rigdon and H. N. Marvin.—p. 185.
Fomite Borne Ancylostomiasis. E. H. Loughlin and N. R. Stoll.—p. 191.
Occurrence of Trombicula Deliensis Walch in Southwestern China. D. D. Millspaugh and H. S. Fuller.—p. 204.
Poliomyelitis in Japan. J. R. Paul.—p. 206.
*Isolation of Poliomyelitis Virus from Throats of Symptomless Children. H. A. Howe and D. Bodian.—p. 219.
Attempts to Infect African Green Monkeys by Oral Administration of Poliomyelitis Virus. H. A. Howe and D. Bodian.—p. 223.
Rise and Decline of Poliomyelitis Virus Levels in Infected Nervous Tissue. D. Bodian and Mary C. Cumberland.—p. 226.
*Poliomyelitis Virus in Urban Sewage in Epidemic and in Nonepidemic Times. J. Melnick.—p. 240.
Effectiveness of Various Rodenticides on Populations of Brown Rats in Baltimore, Maryland. J. T. Emlen Jr. and A. W. Stokes.—p. 254.

Isolation of Poliomyelitis Virus from Throats of Children.—An outbreak of poliomyelitis in Baltimore in the summer of 1944 gave Howe and Bodian the opportunity to make observations on the presence of poliomyelitis virus in the throats of persons who had had varying degrees of contact with patients with paralytic poliomyelitis. Poliomyelitis virus was isolated from the throats of 1 of 3 patients with poliomyelitis and from 1 of 6 juvenile family contacts, but not from 5 adult familial, 7 juvenile or 6 adult extrafamilial contacts of these patients. Virus was present in the throats of at least 2 of 28 healthy children from a neighborhood playground. One year later these children were shown to have antibody against the viruses isolated from them.

Poliomyelitis Virus in Sewage.—Melnick describes further tests for poliomyelitis virus in the sewage from two urban areas. During the 1943 epidemic in Chicago, poliomyelitis virus was detected in the effluent from Imhoff settling tanks on two occasions seventeen days apart. Virus was also found in raw sewage at a plant serving another part of the city, in sewage leaving a hospital with poliomyelitis patients, and in sewage collected from a residential area in which no persons with manifest poliomyelitis were living at the time and in which none subsequently developed. When the epidemic subsided all sewage tests were negative. Monthly tests for poliomyelitis virus in New York City raw sewage have been carried out from 1940 through 1945. In four of the six years virus was detected in the sewage. In one of the two years when virus was not detected no cases of poliomyelitis were reported in the area. Virus was detected only in late summer and fall months in New York. Calculations show that in Chicago 6,000,000 monkey infectious doses of virus were leaving a sewage disposal plant per minute at the time of collection and that in New York 500,000 doses per minute were entering a sewage collection station. A 100 Gm. stool may contain 10,000 monkey infectious doses of virus.

American J. Digestive Diseases, Fort Wayne, Ind.

14:83-120 (March) 1947

Physical Symptom of Value in Diagnosis of Gallbladder Pathology. A. Bassler.—p. 83.
Hypertrophic Pyloric Stenosis in Adult. A. B. Katz.—p. 85.
Study of Mortality Rate in Series of Cholecystectomies. T. G. Orr.—p. 89.
Management of Diabetic in Acute Infections and Surgical Emergencies. J. M. Freston.—p. 93.
Cancer of Cecum: Review of Clinical Features. J. L. Jarvis and D. Cayer.—p. 95.
Evaluation of Some Antacid and Antipeptic Agents in Prevention of Gastric Ulceration in Rat. H. Shay, S. A. Komarov, H. Siplet and Margot Gruenstein.—p. 99.
Value of Gastroscopy as Diagnostic Aid in Gastric Lesions. J. Tesler.—p. 104.
Pruritus Ani: Review of Oral Therapy. L. G. Bodkin.—p. 109.
Psychotherapeutic Methods in Gastroenterology. B. C. Lockwood.—p. 113.

American Journal of Medicine, New York

2:327-368 (April) 1947

Quantitative Aspects of Benzoyl Glucuronate Formation in Normal Individuals and in Patients with Liver Disorders. I. Snapper and A. Saltzman.—p. 327.
*Excretion of Benzoyl Glucuronate as Test of Liver Function. I. Snapper and A. Saltzman.—p. 334.
Hemolysis in Paroxysmal (Cold) Hemoglobinuria. P. F. Wagley, W. H. Zinkham and A. A Siebens.—p. 342.
Bacillus Pyocyaneus Infections: Review, Report of Cases and Discussion of Newer Therapy Including Streptomycin (concluded). M. M. Stanley.—p. 347.
Rheumatic Fever in Children: Clinical and Laboratory Diagnostic Criteria. L. M. Taran.—p. 368.

Excretion of Benzoyl Glucuronate as Liver Function Test.—Snapper and Saltzman describe a simple liver function test which is based on the presence of excessive excretion of benzoyl glucuronate in the urine after ingestion of 5 Gm. of benzoic acid. The test was studied in 23 normal volunteers, in a control series of 100 patients who had no obvious hepatic disturbances and in 89 other patients in whom hepatic disturbances were suspected. In normal volunteers and in patients without hepatic disturbances the test was negative. The test was positive in all cases of hepatitis and portal cirrhosis. The test was positive also in some patients with thyrotoxicosis and in most cases of hepatic metastasis. It was negative in all of nine lymphomas. In 2 cases of early type postarsphenamine jaundice hepatocellular damage was indicated by positive tests. The glucuronate reactions remained negative in a patient with obstructive jaundice of long standing.

American Journal of Ophthalmology, Cincinnati

30:397-536 (April) 1947

Types of Congenital Cataract. F. C. Cordes.—p. 297.
Treatment of Lewisite and Other Arsenical Vesicant Lesions of Eyes of Rabbits with British Anti-Lewisite (BAL). Ida Mann, A. Pirie and B. D. Pullinger.—p. 421.
Tests for Heterophoria: Reliability of Tests, Comparisons Between Tests and Effect of Testing Conditions. R. G. Scobee and E. L. Green.—p. 436.
Acute Glaucoma: Follow-Up Study. H. S. Sugar.—p. 451.
Arachnodactyly (Marfan's Syndrome) Associated with Ectopia Lentis: Report of Case with Pigmentation of Cornea. J. V. Cassady and C. B. McFarland.—p. 469.

American J. Orthodontics and Oral Surgery, St. Louis

33:177-334 (April) 1947. **Partial Index**

**Some Clinical Observations Concerning Noma.* C. C. Wang Sung and R. Y. Sung.—p. 284.
Premedication by Co-Medication in Local Anesthesia. S. I. Copen.—p. 290.
Master Metal Facial Cast for Swaging Lead Masks in Treatment of Carcinoma of the Skin of Face. S. G. Castigliano and P. P. Gross.—p. 319.

Noma.—Wang Sung and Sung report 30 cases of noma admitted to the Dental Clinic of West China Union University. Noma is not a disease by itself but is a terminal sign of some debilitating disease such as measles, dysentery or leukemia. There is no specific treatment for noma. Measures to restore the vitality of the patient and reestablish oral and general cleanliness appeared to be most effective. Milk, orange juice, cod liver oil, yeast, meat broth and green vegetables were fed in large quantities. Necrotic tissue, hopelessly affected teeth and alveolar sequestrums were removed gently. The mouth was irrigated with potassium permanganate solution 1:1,000 twice a day and rinsed with warm saline solution every thirty minutes, not to obtain a germicidal effect but to remove sloughs and bacteria. Acriviolet 2 per cent applied topically was found effective. Blood transfusions revitalized dangerously ill persons

American Journal of Surgery, New York

73:421-528 (April) 1947

Management of Extensive Complete Defects in Long Bones. J. E. Bateman.—p. 423.
*Use and Abuse of Intestinal Decompression Tube: Study Based on 200 Cases. M. O. Cantor, O. S. Kennedy and R. P. Reynolds. —p. 437.
Wounds of Colon and Rectum. J. E. Flynn.—p. 450.
Meckel's Diverticulum: Review of Literature and Analytic Study of 23 Cases, with Particular Emphasis on Bowel Obstruction. J. J. Haber.—p. 468.
Ultraviolet Blood Irradiation Therapy: Further Studies in Acute Infections. G. Miley and J. A. Christensen.—p. 486.
Mycphagism Congenita. W. A. Dalman.—p. 494.
Use of Tantalum for Facial and Cranial Defects. J. Newman.—p. 499.
Strictures Following Transurethral Resection: Comments on Indication for Operation. J. J. Stratte and J. Stratte.—p. 503.

Intestinal Decompression Tube.—By using a single lumen long intestinal decompression tube with a mercury weighted balloon tipped head Cantor and his associates have been able to intubate successfully all but 8 of 200 patients with intestinal distention. The head of this tube constitutes the propulsive mechanism. The only cases in which intestinal intubation alone can be safely used are cases of adynamic ileus or cases in the inflammatory distention group. The use of the intestinal decompression tube as a preliminary to bowel resection or anastomosis obviates the necessity for enterostomy and hence reduces the risk to the patient. Intestinal intubation should be entrusted only to one who understands the mechanism involved in the passage of the tube; that is, the surgeon. Intubation should not be relegated to the intern or nurse, because in the hands of the novice the long intestinal decompression tube is a dangerous instrument.

American Review of Tuberculosis, New York

73:109-194 (Feb.) 1947

Dispersal of Respiratory Pathogens in Relation to Occurrence and Control of Air Borne Infections. O. H. Robertson.—p. 109.
Experimental Air Borne Tuberculosis and Its Control. M. B. Lurie. —p. 124.
Discrepancies Between Clinical-Radiologic and Bronchospirometric Finding. R. F. Vaccarezza, A. Lanari and A. Soubrie.—p. 128.
*Promizole Treatment of Miliary Tuberculosis: Toxic Effects on Thyroid Gland and Maturation. Lillian Milgram, I. Levitt and Maya S. Unna. —p. 144.
Pulmonary Tuberculosis and Season of Birth. Virginia Z. Ehrlich. —p. 160.
*Carcinoma Simulating Pulmonary Tuberculosis. Differential Diagnosis in Presymptomatic Stage in 2 Cases. L. E. Siltzbach.—p. 170.
Tuberculin Testing in Student Nurses. M. N. Shoor.—p. 177.
Method of X-Ray Reproduction of the Negative X-Ray Film. A. Rest and Leona Stroud.—p. 184.

Promizole Treatment of Miliary Tuberculosis.—According to Milgram and her associates the sulfones promin, diasone and promizole, which have a great influence on experimental tuberculosis of guinea pigs, are far less effective in clinical tuberculosis. They administered promizole to 5 children with miliary tuberculosis. Three of these have survived twenty-four to twenty-seven months since the diagnosis was made. The primary chest lesions cleared very slowly and incompletely. Kidney and spine lesions appeared and progressed under continuous administration of the drug. Promizole has bizarre toxic effects on the thyroid gland, breasts and genital hair. These are more likely to appear after prolonged administration.

Carcinoma Simulating Pulmonary Tuberculosis.—Siltzbach shows that industrial mass roentgenologic surveys which include many persons above 40 years of age are bringing to light silent lung carcinomas. He presents the histories of 2 patients with such neoplasms. The first patient was sent to a tuberculosis institution, but since he remained free from symptoms and the lesion appeared unchanged he was discharged with the disease considered arrested after an eight weeks stay. He returned to work and continued to feel well. Five months later he felt a dull pain in the right scapular region. A chest film showed increase in the size and density of the lesion. The borders were sharper and the diameter measured about 4 cm. The fingers showed early clubbing and it was thought that the patient had a bronchial carcinoma. The chest was explored and a mass the size of a walnut was palpated in the posterior portion of the right upper lobe. This lobe and the right middle lobe, which adhered firmly, were extirpated. The tumor proved to be an epidermoid carcinoma. There has been no evidence of recurrence of the neoplasm for two years following the operation. The second patient was considered tuberculous for sixteen months before the true nature of the pulmonary process was realized. This patient died sixteen hours after operation. The author suggests early exploratory thoracotomy when the diagnosis is equivocal.

Archives of Neurology and Psychiatry, Chicago

57:277-396 (March) 1947

*Headache: Teeth as Source of Headache and Other Pain. S. Robertson, Helen Goodell and H. G. Wolff.—p. 277.
Central Course of Afferent Fibers for Pain in Facial Glossopharyngeal and Vagus Nerves: Clinical Observations. A. Brodal.—p. 292.
Meningeal Reaction with Abscess of Brain. B. J. Alpers and F. M. Forster.—p. 307.
Measurements of Pain Sensitivity in Patients with Psychoneurosis. W. P. Chapman, J. E. Finesinger, C. M. Jones and S. Cobb, with assistance of G. Chesley and B. L. Landing.—p. 321.
Incidence of Combat Fatigue. P. Solomon.—p. 332.
Paramyoclonus Multiplex (Friedreich): Clinicotherapeutic Study. A. A. Morris.—p. 342.
Retinal Periphlebitis Associated with Paraplegia. B. P. Silfverskiöld. —p. 351.
Congenital Facial Paralysis. J. P. Murphy and W. J. German.—p. 358.
Cogwheel Phenomenon of Eyes: Its Clinical Significance. N. Savitsky and N. W. Winkelman.—p. 362.
Localized Nontraumatic Neuropathy in Military Personnel. E. A. Weinstein.—p. 369.

Teeth as Source of Headache.—Robertson and his associates studied the effects of noxious impulses experimentally induced and of those arising from morbid processes. The initial pain induced experimentally and felt locally in a tooth had both a burning and an aching quality. The pain secondarily experienced in the head was of two varieties: (1) that due to central spread of excitation and experienced in tissues supplied by the same and adjacent divisions of the fifth cranial nerve and (2) that due to sustained contraction of the muscles of the head and neck resulting secondarily from noxious stimuli arising in the teeth. All the pain experienced remote from the site of noxious stimulation in a tooth was of a steady aching quality and was eliminated by infiltration of monocaine hydrochloride about the primary source of noxious stimuli except that secondarily arising in the muscles of the head and neck as the result of sustained muscular contraction. This component slowly decreased, usually after several hours. Following a period of spontaneous or experimentally induced noxious stimulation in a tooth, the pain threshold of the latter was appreciably lowered until ordinarily inadequate stimuli caused both local and remote pain. Noxious impulses arising from the teeth and associated with headache, although clinically important, are not a common cause of headache.

Archives of Otolaryngology, Chicago

45:283-376 (March) 1947

Sinusitis: Treatment Practiced in Air Force Hospital. A. J. Cracovaner and J. F. Daly.—p. 283.
Treatment of Otitis Media and Sinusitis with Penicillin. S. Karatay. —p. 288.
Use of "Iso-Par" Ointment in Treatment of Otitis Externa. W. T. Reardon.—p. 294.
*Status of Penicillin in Treatment of Diphtheria: Review of the Literature and Report of Case. R. L. Peterson.—p. 298.
Galvanic Skin Response in Differential Diagnosis of Deafness. M. W. Michels and C. T. Randt.—p. 302.
Indications for the Fenestration Operation. H. P. House.—p. 312.
Correlations of Hearing Tests. B. C. Trowbridge.—p. 319.
Learning the Lempert Fenestration Operation. S. Rosen.—p. 335.
Sculptured Synthetic Prostheses as Implants in Plastic Surgery. A. M. Brown.—p. 339.

Penicillin in Diphtheria.—Peterson thinks that no definite conclusion can be drawn as to the status of penicillin in the treatment of diphtheria from the few cases reported in the literature. Although most laboratory work done in vitro suggests that penicillin might be effective in the treatment of this disease, laboratory work on experimental animals fails to bear this out. However beneficial its use might prove to be in inhibiting the growth of diphtheria organisms, penicillin could have no neutralizing effect on the free toxin already in the circulation and the tissues. Partial inhibition of the diphtheria bacilli does not stop the production of toxin. With present knowledge of this drug it can be recommended for use only in the treatment of carriers and of patients whose infection is persistent and who have not responded to adequate amounts of antitoxin.

Bulletin of Johns Hopkins Hospital, Baltimore

80:149-180 (March) 1947

Studies on Protein Metabolism of Infants: I. Comparative Biologic Value of Some Milk Protein Preparations. A. A. Albanese, L. E. Holt Jr., Virginia Irby, Selma E. Snyderman and Marilyn Lein.—p. 149.
Id.: II. Tryptophan Requirement of the Infant. A. A. Albanese, L. E. Holt Jr., Virginia Irby, Selma E. Snyderman and Marilyn Lein.—p. 158.
Antipellagra Action of N'-Methylnicotinamide. V. A. Najjar and Carolyn C. Deal.—p. 166.
Disappearance Time of Treponema Pallidum from Lesions of Early Syphilis Following Administration of Crystalline Penicillin G. H. A. Tucker and R. C. V. Robinson.—p. 169.
Prevention of Pyloric Ligation-Induced Ulcers of Gastric Rumen of Rats by Transabdominal Vagotomy: Preliminary Report. H. N. Harkins.—p. 174.

Bulletin New York Academy of Medicine, New York

23:121-174 (March) 1947

Centennial Celebration: 1847-1947. H. R. Craig.—p. 121.
Recent Advances in Cancer Therapy. C. D. Haagensen.—p. 123.
Tumors of Lung. H. C. Maier.—p. 136.
Occupational and Posttraumatic Cancer. F. W. Stewart.—p. 145.
Skin Tumors. A. B. Cannon.—p. 163.

23:175-242 (April) 1947

Excretion of Water. H. W. Smith.—p. 177.
Pharmacology of Streptomycin. H. Molitor.—p. 196.
*Therapy of Erythroblastosis Fetalis with Exchange Transfusion. A. S. Wiener, I. B. Wexler and T. H. Grundfast.—p. 207.
Eighty Years of Public Health in New York City. I. Weinstein.—p. 221.

Exchange Transfusions in Erythroblastosis Fetalis.—Wiener and his associates describe 2 cases of erythroblastosis which were treated by the method of exchange transfusion. This method entails the use of heparin, the injection of the donor's blood into the saphenous vein at the ankle, and the withdrawal of the infant's blood through the radial artery at the wrist. Of 17 infants treated by this technic all but 1 made a prompt and lasting recovery. This demonstrates the effectiveness as well as the safety of the procedure.

Indiana State Medical Assn. Journal, Indianapolis

40:187-298 (March) 1947

Ten Thousand Spinal Anesthesias, Five Thousand with Ephedrine Intrathecally—Random Comment. F. T. Romberger and F. W. Ratcliff.—p. 217.
Care of Intertrochanteric Fractures of Femur. F. E. Hagie.—p. 219.
Survey of Treatment of Syphilis. J. E. Dalton.—p. 221.
Pruritus Ani. L. R. Pearson.—p. 224.
Treatment of Gonorrhea in Male with Penicillin. R. D. Howell.—p. 225.
Mental Hygiene for General Practitioner. S. T. Ginsberg.—p. 229.

40:299-394 (April) 1947

Complications of Craniocerebral Injuries. P. C. Bucy.—p. 329.
Significance of Changes in Female Breast. C. A. Nafe.—p. 334.
Leukoplakia and Carcinoma of Vulva. D. A. Bickel.—p. 338.
Psychiatric Trend in Medicine. E. V. Hahn.—p. 340.
American Medicine Looks to the Future. G. F. Lull.—p. 348.
The Nurse Shortage. E. Nancy Scramlin.—p. 352.

Iowa State Medical Society Journal, Des Moines

37:145-186 (April) 1947

*Action of Choline on Blood Lipid Fractions in Cirrhosis of Liver, Diabetes Mellitus and Related Conditions of Disturbed Fat Metabolism. W. D. Paul, Kate Daum and C. R. Kemp.—p. 146.
Punch Biopsy of Liver. T. L. Carr.—p. 152.
*Vaginal Smear in Diagnosis of Gynecologic Cancer. W. E. Brown, O. F. Kraushaar and J. T. Bradbury.—p. 155.
Physiologic Basis for Therapeutic Trends in Neuromuscular Dysfunction. Norma M. Hajek and H. M. Hines.—p. 157.
Diagnosis and Treatment of Congenital Syphilis. F. E. Simpson.—p. 160.
Psychiatric Needs of General Hospitals. P. E. Huston and J. S. Gottlieb.—p. 163.

Action of Choline in Cirrhosis of Liver and Related Conditions.—Paul and his associates studied patients with diabetes mellitus, cirrhosis of the liver, multiple sclerosis and a miscellaneous group of pathologic conditions in which abnormal fat metabolism is a factor. The diabetic patients receiving choline showed more nearly normal lipid levels than a control group. Low lipid levels were found in cirrhosis, and choline produced a definite increase in the blood lipid levels in a significant number of these. In general, choline therapy improved the blood lipid picture whenever abnormalities existed previous to its administration. A correlation existed between the laboratory findings and the subjective responses to the administration of choline. All subjects noted an increased sense of well being, an improved appetite and an increase in vigor. Both the objective and the subjective results of choline therapy support the importance of this drug and of lipotropic agents in general in treatment of conditions related to abnormal fat metabolism.

Vaginal Smear in Diagnosis of Gynecologic Cancer.—Brown and his associates took vaginal smears from women with and without symptoms suggestive of cancer. Among 65 women with bleeding and discharge there were 16 with positive, 9 with suggestive and 40 with negative vaginal smears. Of 103 without symptoms, 3 had positive and 4 suggestive smears. In a group of 25 women who had previously been treated for carcinoma and had returned for routine checkup, clinical examination revealed recurrence in 14, and the vaginal smear was in agreement 13 times. The smears from the 11 women who showed no clinical evidence of recurrence were negative in 10 instances. It is proposed to screen all women over 30 entering the University Hospital and the female inmates of the state institutions.

Journal of Bacteriology, Baltimore

53:257-381 (March) 1947. Partial Index

*Methylcellulose and Bacterial Motility. A. Pijper.—p. 257.
Comparative Distribution and Possible Pathogenicity of Paracolobactrum Species in Area Highly Endemic for Enteric Infections. W. B. Christensen.—p. 317.
Classification of Rickettsiae of Rocky Mountain Spotted Fever and Endemic (Murine) Typhus. Ida A. Bengtson.—p. 325.
Penicillin: X. Effect of Phenylacetic Acid on Penicillin Production. A. J. Moyer and R. D. Coghill.—p. 329.
Influence of Temperature on Opsonization and Phagocytosis. Christine Zarafonetis, Doralea R. Harmon and P. F. Clark.—p. 343.
Relation Between Rate of Growth of Mutant Strain of Escherichia Coli and Efficiency of Utilization of Arginine. J. O. Lampen and M. J. Jones.—p. 351.
Micromonosporin, an Antibiotic Substance from a Little Known Group of Micro-Organisms. S. A. Waksman, W. B. Geiger and Elizabeth Bugie.—p. 355.

Methylcellulose and Bacterial Motility.—*Pijper* shows that solutions of methylcellulose provide a suitable medium for the study of bacterial motility. Such solutions possess sufficient viscosity to slow down the movement of otherwise fast moving bacteria and thus supply conditions for detailed observation. The special advantage of methocel over the solutions of gelatin and gum used heretofore for this purpose is that the precipitation of the colloid material on bacterial bodies and appendages is minimal, so that motility is not hindered by this thickening. Solutions can be prepared in which for a long time the amount precipitated on the bacteria is just enough to make the fine appendages ("flagella") visible by ordinary dark-ground methods with ordinary lamps. Methocel therefore places the dark-ground study of bacterial motility and bacterial appendages during life within the scope of ordinary microscopic technic.

Journal of the Mount Sinai Hospital, New York

10:297-352 (March-April) 1947

Edward Gamaliel Janeway Lecture: The Sword and the Ploughshare. C. P. Rhoads.—p. 299.
Physiologic Problems in Treatment of Heart Disease. W. Dock.—p. 310.
Operability of Malignant Pulmonary Neoplasms, with Special Reference to Cancer of the Lung. H. Neuhof.—p. 318.
*Effect of Atabrine on Auricular Fibrillation and Supraventricular Tachycardia in Man. M. M. Gertler and S. B. Yohalem.—p. 323.
Tuberculous Fecal Fistula Following Pelvic Surgery: Case Report. D. A. Dreiling.—p. 328.
Echinococcus Alveolaris Infection of Human Liver: Case Report. T. Weinberg.—p. 331.

Effect of Quinacrine on Auricular Fibrillation Tachycardia.—Gertler and Yohalem report 2 cases, 1 of auricular fibrillation and the other of nodal tachycardia, in which regular sinus rhythm was established by the use of quinacrine (atabrine) intramuscularly and intravenously, respectively. Nine cases in all are on record in this hospital to date. This is a preliminary report stressing the usefulness of quinacrine in auricular fibrillation and paroxysmal supraventricular tachycardias as an alternative to quinidine.

J. of Pharmacology & Exper. Therap., Baltimore

89:205-296 (March) 1947

Toxicity and Analeptic Potency of Salicylamide and Certain of Its Derivatives as Compared with Established Analgetic-Antipyretic Drugs. E. R. Hart.—p. 205.

Glucuronic Acid Excretion After Diethylene Glycol Monoethyl Ether (Carbitol) and Some Other Glycols. Jean K. Fellows, F. P. Luduena and P. J. Hanzlik.—p. 210.

Comparison of Bronchodilator Activity of Benadryl with Some of Its Derivatives and Certain Other Substances. F. W. Ellis.—p. 214.

Anesthesia: XXIV. Effect of Cholesterol on Pentothal and Ether Anesthesia. C. B. Farson, C. J. Carr and J. C. Krantz Jr.—p. 222.

Toxicologic Study of Two Histamine Antagonists of the Benzhydryl Alkamine Ether Group. O. M. Gruhzit and R. A. Fisken.—p. 227.

Comparative Activity of Various Antihistaminic Substances Toward the Vasodepressor Response to Histamine. D. F. Marsh and A. J. Davis Jr.—p. 234.

Pharmacologic Properties of Antihistamine Drugs Benadryl, Pyribenzamine and Neoantergan. T. R. Sherrod, F. R. Loew and H. F. Schloemer.—p. 247.

Circulatory Properties of iso-Thioureas, Guanidines, iso-Ureas and Amidines. F. N. Fastier and F. H. Smirk.—p. 256.

Pharmacology of Benzyl-Imidazoline (Priscol). R. P. Ahlquist, R. A. Huggins and R. A. Woodbury.—p. 271.

Factors Influencing Toxicity of Sympathomimetic Amines to Solitary Mice. M. R. A. Chance.—p. 289.

Journal of Urology, Baltimore

57:619-788 (April) 1947

*Late Results of Partial Nephrectomy for Calyectasis with Stone. W. J. Engel.—p. 619.

Conservative Treatment of Renal and Ureteral Colic. J. H. Morrissey.—p. 635.

Chronic Typhoid Pyonephrosis: Report of Case. P. K. Bondy and C. H. Barnwell.—p. 642.

*Surgical Approach to Renal and Other Retroperitoneal Tumors. T. H. Sweetser.—p. 651.

Distant Metastases of 58 Renal Neoplasms. Case Report of Secondary Metastatic Pulsations from a Renal Tumor. B. C. Nalle Jr.—p. 662.

Kidney Tumors: Clinical and Pathologic Study, with Special Reference to "Hypernephroid" Tumor. N. A. Harvey.—p. 669.

Transplantation of Ureters into Rectosigmoid for Exstrophy of Bladder: Review of 41 Cases. C. C. Higgins.—p. 693.

New Technic of Ureterointestinal Anastomosis: Further Report. A. Davalos.—p. 701.

Total Cystectomy for Infiltrating Carcinoma of the Bladder. S. J. Ritter.—p. 719.

Utilization of Heat in Treatment of Tumors of the Urinary Bladder: Presentation of Technic. B. C. Corbus and B. C. Corbus Jr.—p. 730.

*Anterolateral Chordotomy for Refractory Interstitial Cystitis with Intractable Pain. R. M. Nesbit.—p. 741.

True Prostatic Calculus. A. Gentile.—p. 746.

Histopathologic Study of Prostatic Tissue Following Endoscopic Prostatic Resection. R. W. Barnes, R. T. Bergman and S. Farley.—p. 755.

Chemistry of Carcinoma of the Prostate. S. W. Mulholland.—p. 758.

Transurethral Resection to Relieve Urinary Retention Following Operations on the Rectum and Sigmoid. J. E. Bisquertt T. and J. L. Emmett.—p. 771.

Genital Histoplasmosis. A. C. Curtis and E. P. Cawley.—p. 781.

Partial Nephrectomy for Calyectasis with Stone.—Engel reviews 9 cases in which partial nephrectomy has been done for calyectasis with stone and the patients followed for five or more years. The operation is indicated in all cases in which stones are present in dilated calices with evidence of infundibular constriction and is especially applicable when this involves the upper or lower calices, the remainder of the pelvis being essentially normal. The removal of the pathologic calix reduces the chance of recurrent stone. No recurrence has been observed in any case in this series for from five to twelve years after operation. Infection in the kidney cleared up after operation. The intervention carries no greater risk or morbidity than other operations for kidney stone.

Surgical Approach to Renal and Other Retroperitoneal Tumors.—Sweetser describes his scheme for an extraperitoneal approach to renal tumors and stresses that surgery for any mass in the kidney or retroperitoneal tissues should be undertaken with recognition of the possibility of cancer. Exploration is begun through an oblique incision in the flank, and only when cancer is demonstrated is the incision extended. The incision described preserves the nerve supply of all the abdominal muscles. The unopened peritoneum helps in control and retraction of the intraperitoneal organs and protects them from infection and from damage by evaporation and by trauma of packs and retractors. The lateral posture of the patient and shape of the flap result in better exposure than any other approach because the abdominal contents drop away toward the opposite side with little or no need for retractors, and the area of the renal vascular pedicle comes well up into the wound for accurate and adequate primary treatment.

Anterolateral Chordotomy for Intractable Pain in Interstitial Cystitis.—Many patients with interstitial cystitis can be kept reasonably comfortable with a variety of therapeutic methods, but some eventually become refractory and for these Nesbit recommends anterolateral chordotomy. Although chordotomy interrupts the upper sensory neurons concerned with the conduction of pain impulses, it does not interfere with the pathways that mediate the sensations of touch or distention and it does not interfere with the primary reflex arc that controls the bladder. The upper motor neuron remains intact. The patient should be able after chordotomy to urinate at will and with normal micturitional control and should be able to empty his bladder completely. Bilateral anterolateral chordotomy in 2 patients relieved the intractable pain of interstitial cystitis that was refractory to all forms of treatment, including sympathectomy. A remarkable feature in 1 case was that the typical lesions of interstitial cystitis have apparently healed completely. The second patient reported that he was free from bladder pain and that he had normal micturitional control and no nocturia. His sexual function seems to be entirely normal. The preservation of sexual function in the male patient was unexpected. The results obtained in these 2 cases suggest that chordotomy is a logical procedure in advanced interstitial cystitis, but the seriousness of the operation should limit its use to refractory cases alone.

Military Surgeon, Washington, D. C.

100:289-374 (April) 1947

Adaptation of Filtrable Viruses to Different Host Species and Different Tissues. R. A. Kelser.—p. 289.

Medical Accomplishments in New York, New Jersey and Delaware During World War II, with Particular Reference to Metropolitan New York. C. M. Walson.—p. 294.

Evacuation of Sick and Noneffective Wounded in Amphibious Warfare. L. D. Carson.—p. 305.

Naval Research in Oral Pathology. C. A. Schlack.—p. 313.

Effect of High Altitude on Oral Tissues. C. Schuessler.—p. 318.

Medical Rehabilitation Program of the Veterans Administration. A. B. C. Knudson.—p. 323.

Formation Vertigo: Oculovestibulo Disorientation in Formation Flying. E. P. Fowler Jr.—p. 330.

Nursing Under Fire. C. Edwina Todd.—p. 335.

Northwest Medicine, Seattle

46:249-328 (April) 1947

Carcinoma of Colon. K. C. Sawyer.—p. 278.

Carcinoma of Head of Pancreas. L. F. Martinson, S. R. Gillespie, D. G. Duncan and A. L. Severeide.—p. 283.

Anesthesia for Prolonged Operation. N. E. Hamilton.—p. 285.

Extensive Calcification of Pancreas. C. J. Johannesson.—p. 286.

Cause of Congenital Defects Following Rubella in Mother: Role of Adrenals. E. E. Brown.—p. 288.

Study of Diets of Patients in Prenatal Clinic with Attempt to Correlate Dietary Adequacy with Physical Findings. Mary W. Northrop and Geraldine M. Piper.—p. 294.

*Pompholyx and Its Treatment. B. Schuster.—p. 298.

Treatment of Pompholyx.—Pompholyx (dyshidrosis cheiropompholyx) is an acute or subacute skin disease occurring on the hands and feet, characterized by sago-grainlike deeply embedded vesicles and occasionally bullae which may become pustular. They have a tendency to recur during warm weather. Systemic reactions are usually mild, but general malaise may be present and the usual complaints are nervousness, irritability and depression. The therapy of pompholyx has been so disheartening and unsatisfactory that many patients with this condition have long since given up hope of receiving satisfactory relief. Schuster says that Benedek cultured a sporogenous bacillus from closed, intact blisters of pompholyx which he called B. endoparasiticus. He developed a vaccine and used it successfully in the treatment of the disease. Schuster reports several cases in which he used Benedek's vaccine. Of 17 cases treated, 13 were considered therapeutically successful. The average number of injections in those responding to Benedek's vaccine was eight.

Pennsylvania Medical Journal, Harrisburg

50:569-680 (March) 1947

- Suggested Methods for Control of Present Epidemic of Tinea of Scalp. S. M. Peck.—p. 569.
- Penicillin Treatment of Acute Middle Ear and Mastoid Infections. J. G. Wilcox.—p. 574.
- Physical Medicine in Pediatrics. A. A. Martucci.—p. 578.
- Dermatologic Problems in Returning Veteran. C. S. Livingood.—p. 581.
- Carcinoma of Renal Pelvis and Ureter: Etiology and Treatment. A. E. Bothe.—p. 588.
- Hyperthyroidism Without Goiter, with Reference to Use of Propylthiouracil. H. L. Foss and H. M. Klinger.—p. 591.
- Postmenopausal Bleeding. Catherine Macfarlane.—p. 598.
- Liver Function Tests. Eleanor H Valentine.—p. 602.
- Radium Therapy to Nasopharynx for Peritubal Lymphoid Tissue. J. S. McMurray.—p. 606.
- Clinical Experiences with Benadryl in Allergic States L. L. Pennock. —p. 609.
- Malaria—Some Practical Considerations. G. G. Duncan.—p 614.

South Carolina Medical Assn. Journal, Florence

43:59-92 (March) 1947

- Modern Chemistry Applied to Modern Medicine. W. M. McCord —p 59.
- Striking Response with Thiouracil in Hyperthyroidism. W. C. Cantey. —p. 61.

Southern Surgeon, Atlanta, Ga.

13:167-232 (March) 1947

- Blalock Operation for Congenital Pulmonic Stenosis: Report of 2 Successful Cases. C. B Olim and J. G. Hughes.—p. 167.
- Retroperitoneal Chylous Cyst. H. E. Simon and B. Williamson.—p 181.
- Modern Management of Peripheral Vascular Diseases E. L. Lowenberg —p. 187.
- Volvulus Neonatorum. J. A. K. Bush, Cora C. Lenox and H. C. Myers. —p 204.
- Management of Diseases of Pancreas. H. Acuff.—p. 209.
- Carcinoma of Breast. G. T. Howard Jr.—p. 221.

Surgery, St. Louis

21:443-604 (April) 1947

- Surgical Treatment of Aneurysms of Abdominal Aorta. G. De Takats and J. T. Reynolds.—p. 443.
- Resection of Primary Liver Tumors. J. W. Duckett and H. G. Montgomery.—p. 455.
- One Stage Pharyngoesophageal Diverticulectomy. R W. McNealy and J. A. Glassman.—p. 470.
- Surgical Management of Carcinoma of Right Portion of Colon with Secondary Involvement of Duodenum, Including Duodenocolic Fistula: Data on 8 Cases. M. Calmenson and B. M. Black.—p. 476.
- McArthur Operation for Inguinal Hernia. F. Christopher and O. J. Penna.—p. 482.
- Incisional Hernia, Operative Technic. D. V. Troppoli.—p. 485.
- *Adenomatous Goiter Without Hyperthyroidism: Surgical versus Conservative Treatment in Over 200 Patients. J. A. Buckwalter, E. L. Besser and J. W. Dulin.—p. 491.
- *Gastric Resection for Peptic Ulcer: Study of 200 Consecutive Cases. R. N. Bartels and J. W. Dulin.—p. 496.
- Congenital Hypertrophic Pyloric Stenosis. J. T. Akin and G. B. Forbes. —p. 512.
- Lesions of Ampulla of Vater. H. L. Baker and Delma W. Caldwell. —p. 523.
- Enterogenous Cysts of Duodenum: Case Report and Review of Literature. T. A. Shallow, F. B. Wagner Jr. and W. B. Manges.—p. 532.
- Intraperitoneal Hemorrhage Complicating Simple Large Bowel Obstruction. F. N. Dealy and P. A. Miceli.—p. 542.
- Tantalum Cranioplasty: Method for One Piece Fixation. H. C. Dahleen. p. 546.
- Definitive Treatment of Gunshot Wounds of Head. H. Conway and R. T. Hendricks.—p. 556.
- Afferent Conduction via Sympathetic Ganglia Innervating Extremities. F. D. Threadgill.—p. 569.
- Surgical Management of Vascular Leg Ulcers. H. C. Rees and J. G. Slevin.—p 575.
- Device to Test and Improve Circulation in Pedicle Flap. H. May. —p. 582.
- Treatment of Superficial Pyogenic Infections by Direct Injection of Penicillin. J. M. Kenney.—p. 588.
- Effects of Protein and Methionine on Nitrogen Balance of Burned Rats. A. Chanutin and S. Ludewig.—p. 593.

Adenomatous Goiter Without Hyperthyroidism.—Buckwalter and his associates sent out questionnaires to members of the medical and surgical departments in a number of medical schools inquiring as to management of patients with nontoxic nodular goiter. Questionnaires were sent also to 374 patients with nontoxic nodular goiters seen at the University of Iowa Hospitals. Fifty-nine per cent of the patients who had been operated on were improved, while only 8 per cent of those not operated on were improved. The nodular goiter, usually referred to as nontoxic, is often associated with symptoms of nervousness and irritability, palpitation, tachycardia and loss of weight. These symptoms are present when the basal metabolic rate is within normal limits. Surgery is indicated for this group of patients because it will result in relief of symptoms in a significant percentage of cases.

Gastric Resection for Peptic Ulcer.—An earlier review of 50 consecutive gastric resections for peptic ulcer, performed between 1927 and 1940, convinced Bartels and Dulin that their postoperative mortality was too high, that their indications for resection were too limited and that the recurrent ulcer rate was too great. In 100 resections performed from 1941 to 1943 inclusive the postoperative mortality rate was reduced from 28 to 8 per cent. In a further series of 121 resections done in 1944 and 1945 it was further reduced to 1.6 per cent. Radical resection of the stomach did not increase the mortality rate. The indications for resections in peptic ulcer have been extended, as is evidenced in the increasing number of resections performed. The recurrent ulcer rate has been reduced from 14.7 per cent in the first 50 gastric resections to 4.3 per cent in the 92 survivors of the 100 resections performed between 1941 and 1943. There are no known recurrent ulcers in the 119 survivors who were resected in 1944 and 1945. Recurrent ulcer was more frequent after conservative than after radical resection. A relative achlorhydria is necessary to prevent recurrent ulcer.

Texas State Journal of Medicine, Fort Worth

42:621-672 (March) 1947

- Present Status of Knowledge Concerning Etiology of Primary Atypical Pneumonia. S. E. Sulkin.—p. 629.
- Congenital Atresia of Esophagus with Tracheoesophageal Fistula. W. H. Bradford.—p. 634.
- Physiologic Changes During Spinal Anesthesia. J Adriani.—p. 638.
- Review of 9,000 Obstetric Cases at Harris Memorial Methodist Hospital, Fort Worth, Texas. G. H. Beavers, J Bennett, R. L. Grogan and C. Hiett —p 640.
- How Innocent Is the Ordinary Nonpigmented Mole? C. Phillips.—p. 645.

Virginia Medical Monthly, Richmond

74:97-144 (March) 1947

- Surgical Treatment of Bronchiectasis—Role of Penicillin in Postoperative Care. M. L. White Jr.—p. 97.
- Application of Principles of Early Ambulation to Surgical Patients. E T Trice.—p. 103.
- Pseudomastoiditis. F. V. Gammage.—p. 108.
- Treatment of Prefibrotic Liver with Ascites: Report of Case. H. W. Blanton and R. M. Miskimon.—p. 111.
- Acute Appendicitis, with Case Report. J. A. Gannon.—p. 115.
- Choice of Forceps. A. K. Turner.—p. 118.
- Hemorrhage in Putrid Lung Abscess. E. S. Ray.—p. 121.

74:145-194 (April) 1947

- Medical Service Second to None. E. C. Harper.—p. 145.
- Selection of Obstetric Forceps to Suit Case. E. H. Dennen.—p. 150.
- Occiput Posterior and Its Treatment. M. B. Savage.—p. 153.
- *Para-Aminobenzoic Acid in Treatment of Rocky Mountain Spotted Fever. G. W. James III, and H. Walker.—p. 161.
- Juvenile Rheumatic Fever. L. A. Eigen.—p. 168.
- Dissimulation in Schizophrenic Psychoses. L. I. Hallay.—p. 176.
- Do Bony Spurs Cause Pain? F. Hopkins.—p. 179.

Para-Aminobenzoic Acid in Rocky Mountain Spotted Fever.—James and Walker present the histories of 4 patients with Rocky Mountain spotted fever in whom they employed para-aminobenzoic acid. The first patient was a Negro woman aged 49 who was given an initial dose of 8 Gm. on the fourth hospital day and then 2 Gm. every two hours. Three days after the para-aminobenzoic acid was started her delirium cleared, the fever lessened and her appetite returned. After this she improved rapidly, and the medication was discontinued after ten days. She was able to give a history of a tick bite before being taken ill. She was discharged as being cured on the twenty-first hospital day. The other 3 patients likewise recovered after treatment with para-aminobenzoic acid. The authors believe that this drug exerts a definite therapeutic effect on Rocky Mountain spotted fever in both modifying its severity and hastening recovery.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

31:193-256 (April) 1947. **Partial Index**

Experimental Observations on Intravitreous Use of Penicillin and Other Drugs. J. P. Duguid, M. Ginsberg, I. C. Fraser and others.—p. 193.
Case of the Laurence Moon Biedl Syndrome Showing Atypical Retinitis Pigmentosa Associated with Macular Dystrophy. C. Taylor.—p. 211.
Case of Congenital Vertical Shortness of the Lids Combined with Tetrastichiasis. J. Landau.—p. 219.
Grönblad-Strangberg Syndrome. S. Gördüren.—p. 228.
Improved Dark Adaptometer. W. Koch.—p. 235.
Circulatory Studies of Fundus of Eye. P. Weinstein and J. Forgács.—p. 238.

British Medical Journal, London

1:403-436 (March 29) 1947

Marrow Biopsy: Preparation and Use of Paraffin Sections from Sternal Puncture Material. D. F. Cappell, H. E. Hutchison and G. H. Smith.—p. 403.
*Parotidectomy: Indications and Results. H. Bailey.—p. 404.
Plea for Lateral Orbitotomy (Krönlein's Operation). H. B. Stallard.—p. 408.
Lipoid Pneumonia: Pitfall in Diagnosis. R. E. Rewell.—p. 409.
Teratoma of Testis: Spontaneous Disappearance of Lung Metastases. J. E. Schoefield.—p. 411.
Basal Cell Carcinoma at Site of Trauma. T. G. Reah.—p. 412.
Folic Acid in Pernicious Anemia: Effect as Shown by Serial Sternal Punctures. H. Levy.—p. 412.

Parotidectomy.—Bailey states that a mixed parotid tumor remains curable for years, sometimes for a decade or more, yet because of misconceptions concerning its behavior and its treatment it is allowed to pass from curability to an incurable malignant condition. After discussing the bogey of facial palsy and the illusion of enucleation, the author gives his attention to operative details. Surgical operation in the parotid region has been stultified by the instructions surgeons receive from anatomists. Bailey calls attention to an excellent illustrated description of the true anatomy of the parotid gland and its relationship to the facial nerve given by members of the Department of Anatomy of the University of Chicago. Nearly all parotid tumors are completely radioresistant. If various misconceptions were swept aside and if general surgeons would devote time and attention to parotidectomy, parotid tumors would take their place among curable tumors.

Lancet, London

1:315-354 (March 15). 1947

Atomic Energy. J. Chadwick.—p. 315.
*Added Infections in Burns: Study of 233 Cases. L. Colebrook, J. M. Duncan and W. J. H. Butterfield.—p. 321.
*Hypertensive Headache Treated with Potassium Thiocyanate. P. J. W. Mills.—p. 324.
Stevens-Johnson Syndrome: Report of Case. M. Nellen.—p. 326.
Stevens-Johnson Syndrome: Report of 2 Cases. J. O. Murray.—p. 328.
Urinary Excretion of Phosphatases in Man. A. S. V. Burgen.—p. 329.

Added Infections in Burns.—Colebrook and his associates say that during a twelve months period involving more than 1,400 dressings cross infection by hemolytic streptococci, Pseudomonas aeruginosa and Proteus vulgaris introduced while dressing burns has been almost entirely eliminated by doing the dressings in a dust free atmosphere, using a strict aseptic technic and using a penicillin-sulfathiazole cream as a routine application. During the same period a few added infections by these three organisms have occurred (33 in all), but most of these added infections occurred in patients whose burns had been imperfectly covered before they were redressed. The incidence of added infection in burns which were found to be imperfectly covered when they arrived for redressing was ten times as high (8.6 per cent) as that of the burns which had perfect cover throughout the period between dressings (0.8 per cent). Among the 224 patients admitted without streptococcic infection only 12 acquired this infection during their stay in the hospital, and the clinical effect of these few added infections was practically nil. The problem of controlling added infections of burns with Staphylococcus aureus remains untouched. These infections, which are numerous, may well play a prominent part in the slow healing of burns during the later stages of recovery.

Hypertensive Headache Treated with Potassium Thiocyanate.—Mills used potassium thiocyanate in the treatment of 27 cases of benign hypertension in which headache and giddiness were prominent symptoms. Besides these, 8 cases of benign hypertension, presenting with symptoms other than headache and giddiness, and 10 cases of malignant hypertension were treated. The conclusion reached is that this drug has a definite but limited place in the treatment of hypertension and should be restricted to cases in which hypertensive headache is a predominating and troublesome symptom and does not respond to simpler forms of therapy. This drug does not affect the course of the disease nor does it permanently lower the blood pressure, even in cases in which there is much symptomatic improvement. Potassium thiocyanate should be regarded purely as a palliative.

1:355-394 (March 22) 1947

The Chronic Sick in Hospital: Psychiatric Approach. J. W. Affleck.—p. 355.
*Treatment of Anuria Following Intravascular Hemolysis. R. H. Dobbs.—p. 360.
*Palpable Epitrochlear Glands: Incidence and Relation to Syphilis. L. Martin.—p. 363.
*Revaccination in Adults. J. C. Broom.—p. 364.
Sexual Inversion: Ethical Study. D. Stanley-Jones.—p. 366.
Anterior Bone Graft for Recurrent Shoulder Dislocation. J. C. R. Hindenach.—p. 369.

Treatment of Anuria Following Intravascular Hemolysis.—In the case described by Dobbs a soldier appeared to be dying of extreme oliguria and uremia following massive hemolysis after transfusion. Decapsulation of one kidney under spinal anesthesia was followed by an immediate diuresis, which reached a maximum in ten days, and by a more gradual return to normal of urine and blood urea level and by eventual recovery. Improvement probably cannot take place until diuresis sets in; consequently, when decapsulation is contemplated, it should be undertaken early. The case presented here was 1 of 8 in which decapsulation was done, with recovery in 7, whereas of 46 treated conservatively 31, or about two thirds, were fatal. Unilateral decapsulation appears to be sufficient and is probably followed by diuresis and eventful recovery in both kidneys. Rapid diuresis but slow recovery of the concentrating power of the kidney suggests that anuria and tubular damage have a separate etiology. Tubular damage is sustained as the toxic products of hemolysis pass down and are concentrated in the tubules. Raised intrarenal tension possibly plays its part in the production of anuria, but a more satisfactory explanation is that it is reflex in origin and that decapsulation is effective by removing sympathetic nerve impulses. The spinal anesthesia used in the operation of decapsulation may be a factor in initiating diuresis. Splanchnic block would be a more satisfactory method and has been used with success in reflex anuria and in transfusion kidney.

Palpable Epitrochlear Glands in Syphilis.—According to Martin there is a belief that enlargement of the epitrochlear glands is suggestive of syphilis in the stage of general adenitis which precedes secondary skin eruptions. Palpable epitrochlear glands were so commonly observed in soldiers during the late war that the author made a survey to define their normal limits of size and their incidence in adult males. A survey comprising 200 soldiers and 100 male civilians between the ages of 16 and 50 showed that epitrochlear glands were palpable in about 40 per cent. Of the palpable epitrochlear glands, 14 per cent exceeded the size of a cherry stone. Appreciation of these normal limits is essential before describing a palpable epitrochlear gland as enlarged or pathologic. There is no reliable evidence to support the belief that enlarged epitrochlear glands are more characteristic of syphilis than of other diseases which cause glandular enlargement.

Revaccination in Adults.—Broom says that during 1945 civilians were recruited by UNRRA to administer the camps then being set up in northwestern Europe for "displaced persons." On the assumption that the risk of infection would be high in these camps it was decided that every member of the staffs who did not possess a certificate of vaccination less than a year old should be vaccinated against smallpox. A series of 1,227 adult revaccinations against smallpox is described. Details are given of the method of vaccination, including the insertion of killed virus as an indicator of sensitivity to vaccine lymph.

Sensitivity reactions are shown to develop at all intervals and to be unrelated to immunity. It is suggested that these reactions lead on occasion to misinterpretation of the response to vaccination. Attention is drawn to the lack of provision in the international certificate of vaccination against smallpox of a category to include persons who are insusceptible to vaccinia but do not show the reaction of immunity; an alternative method of certification is proposed.

Acta Clinica Belgica, Brussels

1:489-593 (Nov.-Dec.) 1946. **Partial Index**

Medical Treatment of Pulmonary Abscess. J. V. Joossens and A. Lantmeeters.—p. 489.
*The Question of Agonal Bacteremia in Human Subjects. M. Millet, M. Keeremans and L. Fincler.—p. 502.
*Malignant Exophthalmos with Ophthalmoplegia Following Treatment with Thyroid Inhibitors. P. A. Bastenie and R. F. Tagnon.—p. 531.
Importance of Bronchial Lesions in Patients with Pneumonoconiosis. W. Bruninx.—p. 536.

Agonal Bacteremia in Human Subjects.—Millet and his associates studied the problem of agonal bacteremia by blood cultures in dying patients and observing body invasion early after death. They conclude that invasion of the blood stream by intestinal microbes during agony occurs in only a few instances when the natural immunity is low.

Malignant Exophthalmos Following Treatment with Thyroid Inhibitors.—Bastenie and Tagnon present the histories of 2 patients who developed toxic diffuse goiter after treatment with thyroid inhibiting substances. One of the patients had been treated with aminothiazole and the other with thiouracil. These observations prove the dissociation between the toxic and the ocular symptoms of toxic diffuse goiter. In both patients severe exophthalmos developed after the basal metabolism had returned to normal or below it. What makes the 2 cases especially noteworthy is the rapid appearance of palpebral edema, chemosis and ophthalmoplegia. The exophthalmos subsided on discontinuance of the thyroid inhibiting medication and administration of small doses of thyroid.

Schweizerische medizinische Wochenschrift, Basel

77:275-298 (March 1) 1947

*Thiomidil (4-Methyl-Thiouracil) in Treatment of Hyperthyroidism. O. Spühler.—p. 275.
Mode of Action of Pneumoperitoneum. K. Lenggenhager.—p. 283.
Origin and Site of Formation of Cutaneous Melanogen. J. Wohlgemuth. —p. 285.
Genesis of Generalized Edema: Role of Chloride. *Catherine Kousmine.* —p. 290.

Thiomidil (4-Methyl-Thiouracil) in Hyperthyroidism.—Spühler maintains that thiomidil, 2-thio-4-methyl-6-oxypyrimidin, was somewhat less toxic and more effective than thiouracil in the treatment of 50 cases of thyrotoxicosis. The doses required are smaller with this preparation than with other thiourea derivatives. In order to avoid the development of myxedema as the result of excessive doses, the basal metabolism must be tested at regular intervals or the blood cholesterol must be ascertained. The struma may become harder and larger as the result of excessive doses, but these changes rapidly disappear after the drug is discontinued. At the onset of the medication there may be excitation and nausea, but these subside quickly and do not necessitate interruption of the medication. Although no cutaneous eruptions or granulocytopenia were observed, watch must be kept for the possible development of agranulocytosis. Thiomidil should not be given to pregnant women because it rapidly passes to the fetus and may cause damage. Medication with thiomidil increases the sensitivity to digitalis and strophanthin, so that previously ineffective doses become active.

Revista med. del Hospital General, Mexico, D. F.

9:253-336 (Jan.) 1947. **Partial Index**

*Hemorrhage in Liver Cirrhosis. J. Flores Espinosa.—p. 253.

Hemorrhages in Liver Cirrhosis. — Flores Espinosa observed 275 patients with liver cirrhosis at the Hospital General de Mexico City during a period of three years. A necropsy was performed on 49 patients. The cause of death in 25 cases was massive fatty degeneration of the liver. In 11 patients who died of acute anemia following acute or repeated gastrointestinal hemorrhages, bleeding was due to ulcerated gastric or esophageal varices and less frequently to multiple ruptured capillaries of the gastric mucosa and submucosa and to blood dyscrasia of the type of purpura due to metabolic disorders of the C and K vitamins. Clinically the hemorrhagic tendency is manifested by blood spitting or by small gingival and subcutaneous hemorrhages, hematuria and gastrointestinal hemorrhage. The bleeding time and coagulation time are prolonged, the prothrombin time shortened and the number of blood platelets diminished. The therapy of gastrointestinal hemorrhage in cirrhosis is preventive. It consists in administering a diet rich in proteins, carbohydrates and vitamins and poor in fats. Insulin, dextrose, liver extracts, local diathermy of the hepatic region, choline and methionine also are indicated.

Acta Medica Scandinavica, Stockholm

126:*437-612 (March 3) 1947.* **Partial Index**

Three Cases of Felty Syndrome. O. Ytrehus.—p. 437.
Changes in Blood Pressure During Period of Starvation (September 1944 to May 1945) and After Liberation (May 1945 to September 1945) in Utrecht, Holland. S. Lups and C. Francke.—p. 449.
Changes in Electrocardiogram During Allergic Shock. T. Castberg and M. Schwartz.—p. 459.
Influence of Transfusion Velocity on Occurrence and Rate of Reactions. B. E. Gernandt and B. Swedberg.—p. 472.
Hyperchromic Anemia with Megalocytes Refractory to Liver Therapy: Achrestic Anemia. E. F. J. H. Falger.—p. 505.
Comparative Frequency of Diphtheria in the Vaccinated and the Nonvaccinated. R. Rendu.—p. 529.
**Does Poliomyelitis Virus Grow in Sewage?* *C. A. Evans.—p. 541.*
Electrocardiogram in Typhus. L. Norviit.—p. 565.

Does Poliomyelitis Virus Grow in Sewage?—Evans presents data which suggest that the number of carriers of poliomyelitis virus in the population during times of moderate incidence of poliomyelitis must frequently approximate 1 per cent. If 1 per cent of the population is excreting poliomyelitis virus at a given time, and if a 1,200 cc. sample of sewage contains 0.5 to 1.5 Gm. of feces, this amount of sewage will contain, on the average, 5 to 15 mg. of feces from excretors of virus. It might reasonably be expected to infect monkeys with occasional specimens of this small size. Therefore the finding of poliomyelitis virus in sewage is compatible with the results that might be expected on the basis of contamination from carriers of virus. The growth of virus in protozoa or other micro-organisms of sewage is not essential to explain such isolations. However, such growth of virus, or the simple harboring of virus by micro-organisms in sewage, cannot be excluded.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:477-532 (March 25) 1947. **Partial Index**

Frequency of Infection of Urinary Passages. L. Loopuyt.—p. 482.
New Methods for Examination of Feces for Pathogenic Intestinal Bacteria and Its Significance for Epidemiologic Examination. A. C. Ruys. —p. 487.
*Treatment of Hernia of Nucleus Pulposus or of Prolapse of Intervertebral Disk. A. C. de Vet.—p. 493.

Hernia of Nucleus Pulposus.—According to de Vet it is possible to differentiate between prolapse of the intervertebral disk in which pressure of the nucleus pulposus drives the annulus fibrosus outward and the typical hernia in which the tissue of the nucleus pulposus perforates through an opening in the annulus fibrosus into the vertebral canal. As a rule in case of prolapse backache predominates, whereas in the presence of hernia symptoms of sciatica are most pronounced. Since prolapse and hernia may be combined, symptoms of backache and sciatica may be present. The classic complaints of chronic low back pain and sciatica may become intensified as the result of mechanical influences and by hydrodynamic factors. The clinical examination does not always permit a correct localization; in these cases myelography is indicated. Surgical intervention should never be adopted unless conservative therapeutic measures have been applied. Absolute rest is one of the most successful methods of conservative treatment. The extradural approach is highly preferable to the transdural one, but the latter cannot always be avoided. It should be accepted as a rule always to examine both sides of the disk.

Book Notices

The Treatment of Diabetes Mellitus. By Elliott P. Joslin, A.M., M.D., Sc.D., Medical Director, George F. Baker Clinic, New England Deaconess Hospital, Boston, and others. Eighth edition. Cloth. Price, $10. Pp. 861, with 13 illustrations. Lea & Febiger, South Washington Square, Philadelphia 6, 1946.

Joslin's textbook on diabetes mellitus, now in its eighth edition and expanded by the collaborative effort of his associates, is undoubtedly the best known book on the subject. It has become encyclopedic in its scope, recording not only the extensive clinical experience of its authors in the George F. Baker Clinic in Boston but referring impartially to most of the relevant work of others. Such an imposing array of facts concerning one disease is a monument to the painstaking effort of the group who have collected and organized them, and especially to the senior author.

The title of this book has always remained "The Treatment of Diabetes Mellitus." Except for the wisdom of preserving the original title it is somewhat misleading, because the breadth of coverage of the book goes far beyond therapeutics. Everything of any interest related to diabetes mellitus is described completely and accurately, in a well organized manner and with the insight and interest that only clinicians who have studied thousands of patients and most of the pertinent experimental and clinical literature can accomplish. For many practicing physicians, students and interested laymen the volume has become a veritable Bible on diabetes.

The new edition is revised with elaborate thoroughness, retaining most of the authors' statistical data and fundamental concepts regarding the disease and at the same time adding all new and important developments since the previous edition. The sections on alloxan diabetes, degenerative complications, insulin modifications, pregnancy and related endocrine disorders are revised from a particularly modern point of view.

In addition to the well known sections by the chief author, Drs. Root and Marble have each written or contributed to eight chapters out of thirty-one, and Drs. White and Bailey each five. Associated diseases such as cancer, syphilis and tuberculosis, as well as neurologic, hematologic, cutaneous, genitourinary, allergic and surgical disorders are covered with exhaustive thoroughness.

The experience of Dr. Joslin and his associates is spread over forty-eight years, covers about 29,000 diabetic patients (of whom more than 8,000 have died), about 2,200 children and more than 300 pregnancies. During this period major changes in therapy and understanding of the disease have taken place. The average age at death has risen from 44 to 64 years. It is now therefore almost the same as in nondiabetic persons. The careful follow-up records and analyses of their own cases made by the Boston group of clinicians provides an invaluable source of statistical data on many subjects. Largely because of them the estimated million diabetic subjects in this country are now able to obtain life insurance.

The picture of the disease painted in faithful detail in this volume from the point of view of such extensive contact is literally the backbone of modern knowledge, in English speaking countries at least, regarding diabetes mellitus. Every physician who is interested in the disease should have the book available for reference.

Nursing in Commerce and Industry. By Bethel J. McGrath, R.N., Chief Industrial Nursing Consultant, American Association of Industrial Nurses, Minneapolis. For the National Organization for Public Health Nursing. Cloth. Price, $3. Pp. 356, with illustrations. Commonwealth Fund, Division of Publications, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1946.

This book, by the former industrial nursing consultant of the National Organization for Public Health Nursing, is by all odds the most authoritative and readable textbook on industrial nursing which has been published to date. Written by a nurse who has actually worked in commerce and industry and who knows the problems from first hand observation, it answers a need long felt not only by the nursing profession but by employers, personnel workers and others concerned with the development of sound health programs in industry. Dr. Alice Hamilton has written an introduction in which she comments on the great changes which have taken place in industrial medicine since she first entered that scene in 1910. Mrs. McGrath's basic interest in industrial nursing is interwoven with allied fields, and her subject matter covers a wide territory. The book opens with a history of industrial nursing since the first nurse was employed in 1895 to serve the workers of the Vermont Marble Company of Proctor, Vt. Chapters follow on the relationships of the nurse with "top management," personnel and safety departments, employees and employee organizations; physical facilities of an industrial trial health service, healthy working environment; a health program for every worker; occupational accidents and hazards; occupational and nonoccupational diseases; mental hygiene, sight conservation, orthopedic nursing; nutrition; problems peculiar to women; communicable disease control, records and reports; rehabilitation, workmen's compensation; welfare activities, and part time nursing service given to industry by outside organizations. Special attention is devoted to the need for competent medical direction of the nurse in the plant. Whether the physician in charge is full time, part time or on call, the nurse must have a clearcut understanding of the amount and kind of authority he has delegated to her and must have suitable written orders. These topics give some indication of the subject matter the author covers. The book is scholarly, the material well arranged, the format pleasing. There are charts, samples of record forms, samples of standing orders, and in addition to a comprehensive list of references at the end of each chapter also a listing of sources of information. The book fulfils the implications of its title. Dr. Hamilton has concluded her introductory comments with the statement "This book is not only for nurses, it is for the general public." It will repay careful study by those in close contact with workers, and it will prove helpful to any whose primary interest and concern are in humanity.

Ophthalmic Surgery and Sight-Testing. By M. A. Kamath, M.B. & C.M. Second edition. Cloth. Price, 6 rupees. Pp. 297, with 67 illustrations. The Author, Planters Lane, Mangalore, S. K. Dt., 1944.

This is intended for the general practitioner in India for care of patients too far from the centers where trained ophthalmologists are available. The book is very elementary and includes chiefly the diseases encountered in India. The author describes surgical procedures which are often done by practitioners in India. Many general surgeons in mission hospitals in India do 200 operations in a year for cataract. On page 160 when writing of complications of the cataract operation the author states that detachment of the choroid is due to hemorrhage and causes severe pain. He has confused this condition with expulsive hemorrhage of the choroid. Detachment of the choroid is quite common after intraocular operations and disappears without treatment in a few days. The book may be of value to the general practitioner in India but will have no sale in the United States, where many much more authoritative works are available.

Annual Review of Biochemistry. Edited by J. Murray Luck, James H. C. Smith and Hubert S. Loring. Volume XV. Cloth. Price, $5. Pp. 687, with illustrations. Stanford University, California: Annual Reviews, Inc., 1946.

The present volume of the annual reviews of biochemistry maintains the high standards set by its predecessors. Well indexed, it is an exceedingly useful means of locating information recently published in this field, and the mode of treatment has the advantage that each item is critically evaluated and oriented with respect to other items. The twenty-one reviews deal with biologic oxidations and reductions, nonoxidative enzymes, plant carbohydrates, the chemistry of the lipids, the chemistry of the proteins and amino acids, the chemistry of the steroids, carbohydrate metabolism, fat metabolism, the metabolism of proteins and amino acids, the vitamins, the chemistry of the hormones, the biochemistry of teeth, growth factors for micro-organisms, photosynthesis, the respiration of plants, the biochemistry of yeast, bacterial metabolism, immunochemistry, organic insecticides, the viruses and inactivation and detoxication of pressor amines. The excellent quality of this book adds to the significance of the opening tribute on page vii to the memory of Carl L. A. Schmidt.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

PENICILLIN ALLERGY

To the Editor:—A man has had morning attacks of sneezing and rhinitis for several years, which were believed to be due to cigarets. In 1932 he developed a mild urticaria following the use of amidopyrine, which disappeared when the drug was discontinued. Two brothers have asthma and hay fever respectively. Six weeks ago he developed a sinus and bronchial infection and discontinued smoking. The sneezing and rhinitis stopped promptly and have not recurred. For the sinus infection he was given two injections of 50,000 units each of penicillin in oil (Solvecillin) at *twelve hour intervals followed by 20,000 units in isotonic solution of* sodium chloride every three hours for five doses. The sinus infection was cured. However, twelve days after penicillin therapy the patient developed urticaria, which has persisted for four weeks. Pyri-Benzamine (Ciba) 100 mg. three to four times a day controls the itching and the rash, but, if this medication is not taken regularly urticaria breaks out on different areas of the body. Calcium gluconate 15 grains (1 Gm.) four times a day was given for several days. Is the urticaria due to penicillin? Should allergic tests be done? What other treatment is advised?

Warren L. Trexler, M.D., Topton, Pa.

Answer.—Urticarial reactions occurring several days after penicillin administration constitute the most common allergic manifestation from this drug. Such a reaction usually lasts from one or two days to three or four weeks. In some cases the urticaria continues to persist. In such instances two possible explanations can be offered. One possibility is that new additional sensitivities have been added to the penicillin allergy, perhaps because of modification of the sensitizing mechanism. The other explanation of this phenomenon may be that the allergic reaction to penicillin may initiate a conditioning of tissues so that they now respond similarly to other stimuli with release of H-substance responsible for vascular changes resulting in urticaria.

Calcium salts intravenously are more effective than calcium orally. Nonspecific treatment such as typhoid or colon bacillus vaccine subcutaneously may be effective in altering the conditioning mechanism. Skin tests usually fail to give the desired information in the etiologic diagnosis of urticaria. It is better to observe the patient's diet and other exposures to allergenic substances. Is he taking other drugs? If so, these drugs should be avoided. Restricted diets are usually indicated in such cases. One of the simplest diets is a diet composed exclusively of milk products. A less radical diet is one eliminating such foods as fish, nuts, fresh fruits and vegetables.

SENSITIVITY TO GALLBLADDER DYE

To the Editor:—A woman aged 58 had a severe reaction on the evening after taking a gallbladder dye (Priodax), with the sudden development of severe chills, a temperature of 104.4 F. and severe generalized pains specifically localized in the pelvic girdle and requiring ¼ grain (15 mg.) of morphine sulfate for relief. The following day her temperature was normal but she was badly weakened by this febrile episode. On the second day after the episode she felt perfectly well. She had never previously had any similar illness. There was no evidence of chronic malaria, infection or influenza. It was suspected that the reaction was due to the ingestion of the gallbladder dye. Previous administration of iodides by mouth had been attended by unusual amounts of prostration, which had been thought elsewhere to be sensitivity to the iodides. The Graham Cole study has not been repeated. Has any idiosyncrasy of this type been reported?

M.D., Illinois.

Answer.—Since the *introduction of Priodax in roentgenology* of the gallbladder numerous articles have appeared in which the toxic symptoms of the drug have been discussed. The symptoms encountered include nausea and vomiting, diarrhea, mild griping abdominal pain, burning on urination, epigastric distress, burning of the throat, dizziness and headaches. None of these have been severe. Severe reactions of the type described in the inquiry were not encountered in 3,000 gallbladder visualizations in a large clinic in which the drug was used. Similarly, perusal of the current literature does not yield further information on the subject. Although one cannot rule out Priodax as the cause of this reaction without further tests, it is quite possible that the offender may be the iodine radical contained in the drug, since the patient is known to be sensitive to it. Investigation of an idiosyncrasy to both iodine and Priodax may be undertaken, using one of the accepted dermatologic methods.

TREATMENT OF SCABIES

To the Editor:—An entire family consisting of 2 adults and 2 children is under treatment for scabies. The condition has been present for over six months. They have been under the care of competent men and have received numerous courses of sulfur and benzyl benzoate with apparent cures, only to have recurrence in one or two weeks. The treatments were properly applied and followed by correct sterilization of the personal and bed clothing. The family lives in a one story single house. How long can Acarus scabiei live away from the human host (i. e., on sheets or clothing)? Can the scabies mite live in furniture, toys and other household fixtures and for how long? Is it necessary to remove the family temporarily and fumigate the house to rid the house of Acarus scabiei? What method of treating the bedding is best?

Irving Saffran, M.D., Dorchester, Mass.

Answer.—Experiments by Mellanby, Johnson, Bartley and Brown (*Bull. Entomol. Res.* **33:**267, 1942) indicated that at 55 F. and 90 per cent relative humidity the majority of itch mites died within one week when kept off the human host. A few survived as long as fourteen days. At temperatures below 55 F. survival times were shorter. In careful experiments carried out in England on volunteers during the war (Mellanby, Kenneth: *Brit. M. J.* **2:**405 [Sept. 20] 1941) success was attained only twice out of sixty-three trials in transmitting the mite through infested underclothing and blankets even though conditions were made as favorable as possible to successful transmission. On the other hand, even slight personal contact serves as an effective means of spread. Most instances of persistence of the infestation in families are the result of incomplete treatment without the repetition so necessary to complete eradication of second or third generation mites. Although benzyl benzoate is the most potent carcopticide known, it is difficult for the patient to apply the liquid or cream preparations satisfactorily himself. Sarcoptes is sensitive even to moderate heat. Adult females in the experiments noted were killed in ten minutes at 120 F., in thirty minutes at 117.5 F. and in twenty-four hours (not more than forty-eight hours) at 82 F. It would appear from these experiments that one might kill the mites in a house in one week end by maintaining a temperature of 85 to 90 F.

PAINFUL VENOUS DILATATION

To the Editor:—A white woman aged 44 developed generalized acute intermittent pains two years ago along the course of the veins in the arms and legs. During the attacks of pain the particular veins involved become dilated and puffed up and are extremely tender to touch. This occurs in the various parts of the extremities but is most pronounced in both the arms and the shoulders. The patient has tried physical therapy and various types of intravenous injections (including sodium citrate) without relief. The pain is so severe in the morning that she is unable to rise. The past history includes scarlet fever at the age of 31 and an appendectomy at 30. Her menstrual history is normal. *The pulse, blood pressure and temperature are normal. Serologic tests,* sedimentation rate and blood count are normal. The patient has been hospitalized for observation. We are unable to find records of similar cases. Please discuss the diagnosis.

Michael Smith, M.D., West Palm Beach, Fla.

Answer.—The data supplied by the inquiry do not suffice to give constructive help. It is stated that the veins puff up and become tender intermittently, particularly in the arms and shoulders. If the superficial network of veins is meant, they are ordinarily not visible in the shoulders except in the presence of an obstruction of the subclavian veins or of the superior vena cava. It is not clear whether these attacks represent sudden rises in venous pressure, generalized or localized, or whether they are attacks of venospasm or of periphlebitis. The lesion may be neurologic or functional.

TOXIC EFFECTS OF CASITE

To the Editor:—Are there any ill effects from the use of casite by automobile mechanics?

Riley Burnett, M.D., Biloxi, Miss.

Answer.—Casite is a solvent designed for the removal of sludge from motors (not to be confused with "Caseite," an unrelated hardener for metal treatment). The formula for casite may have been modified within the past few years. At one time this fluid had the following characteristics: a distillation range with the initial point at 334 F. and an 85 per cent completion at 700 F.; flash point 180 F.; free from acid; specific gravity 0.916. While identification is incomplete, it is probably a naphtha derivative akin to kerosene and gas oil plus a base of light engine oil. Dermatitis (oil furunculosis or naphtha dermatitis) may follow skin contact. Naphtha vapors from gross exposure may provoke "naphtha jags," an acute condition resembling acute alcoholism. Prolonged excessive exposure may induce a rare condition, "chronic naphtha poisoning," with features resembling multiple sclerosis.

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TRANSTHORACIC VAGOTOMY

The Effects in 57 Patients with Peptic Ulcer and the Clinical Limitations

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Interest in vagotomy as a surgical treatment for peptic ulcer has been revived during the last four years Reports by Dragstedt and his associates,[1] by our group[2] and by Moore and his associates[3] have dealt primarily with physiologic changes Brief clinical reports have described encouraging therapeutic results. It has been emphasized that distressing complications may occur and that final conclusions are not warranted until more patients are observed for a longer time. Nevertheless, clinical trial is now widespread.

Even though final conclusions are not possible it seems advisable that current observations be reported and that tentative impressions of clinical limitations and of the significance of complications be presented Detailed reports of physiologic, roentgenologic and chemical studies will be abstracted in this report and later presented in detail by individual authors

Fifty-seven patients with refractory or frequently recurring peptic ulcer were treated by transthoracic vagotomy or transthoracic vagotomy and gastroenterostomy from July 1944 through September 1946. Some of the results in 50 of these patients have been presented.[2] Section of the vagus nerves was accomplished through a left thoracotomy wound by resecting the two main trunks and the branches that lie along the lower third of the esophagus[4] Gastroenterostomy when used was performed through a transverse abdominal incision. Table 1 presents the data on the type of operation employed, the location of ulcers and the duration of symptoms One patient had a bilateral transthoracic splanchnicectomy for hypertension at the time of vagotomy for duodenal ulcer. Four were explored through separate abdominal incisions just before vagotomy to verify the presence of ulcer. There was 1 death seventeen days after combined vagotomy and gastroenterostomy due to rupture of the stomach after an acute gastric dilatation and later a terminal massive hemorrhage from a duodenal ulcer

All the patients were studied in the hospital during the week before operative intervention and with 1 exception during the first two weeks afterward Forty-six have been hospitalized for follow-up study at three months and then at yearly intervals Of these, 35 have been readmitted between three months and one year, 3 between one and one and one-half years and 8 between one and one-half to two and one-half years after operation[5] The current status of each patient has been ascertained during office visits and by questionnaire

During each study period in the hospital gastric secretions were obtained by overnight suctions, frequently before and after the administration of histamine, and occasionally before and after insulin hypoglycemia and caffeine test meals. Gastric motility was studied by the intragastric balloon method and by fluoroscopic examination after the ingestion of barium. Repeated roentgenologic examinations of the small and large intestines were made The effect of stimulation of the vagus nerves during high spinal anesthesia has been determined in 4 patients The effects of various parasympathomimetic drugs were also investigated

GENERAL CLINICAL RESULTS OF VAGOTOMY

The effects on major symptoms of ulcer are abstracted in table 2 *A* and will be amplified briefly. Before vagotomy each of the 56 patients had experienced some pain; 35, tarry stools or hematemesis, and 43, vomiting The number with severe pain, frequently recurring episodes of massive hemorrhage and frequent vomiting is given in table 2 *A*. After vagotomy severe pain or massive hemorrhage did not recur. Periodic mild or atypical ulcer-like pain was described

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[1] Dragstedt, L R, and Owens, F M Supra Diaphragmatic Section of the Vagus Nerves in Treatment of Duodenal Ulcer, Proc Soc Exper. Biol & Med **53:** 152 154, 1943 Dragstedt, L R, Palmer, W L, Schafer, P W, and Hodges, P C Supra Diaphragmatic Section of the Vagus Nerves in the Treatment of Duodenal and Gastric Ulcers, Gastroenterology **3:** 450-462, 1944 Dragstedt, L R, and Schafer, P W Removal of the Vagus Innervation of the Stomach in Gastroduodenal Ulcer, Surgery **17:** 742 749, 1945 Dragstedt, L R Vagotomy for Gastroduodenal Ulcer, Ann Surg **122:** 973 989, 1945 Thornton, F F, Jr, Storer, E H, and Dragstedt, L. R Supradiaphragmatic Section of the Vagus Nerves Effect on Gastric Secretion and Motility in Patients with Peptic Ulcer, J A M A **130:** 764 771 (March 23) 1946

[2] Grimson, K S, Taylor, H M., Trent, J C, Wilson, D A, and Hill, H C The Effect of Transthoracic Vagotomy upon the Functions of the Stomach and upon the Early Clinical Course of Patients with Peptic Ulcer, South M J **39:** 460 472, 1946 Ruffin, J M, Grimson, K S, and Smith, R C The Effect of T[illegible] Vagotomy upon the Clinical Course of Patients with Peptic 599 606, 1946 Smith, R C, Ruffin, J M, a of Transthoracic Vagus Resection upon Patie M J. **40:** 1 10, 1947

[3] Moore, F D, Chapman, W P, Schulz, M D and Jones, C M Transdiaphragmatic Resection of the Vagus Nerves for Peptic Ulcer New England J Med **234:** 241 251, 1946, Vagus Resection in Peptic Ulcer Physiologic Effects and Clinical Results, J A M A **133:** 741 759, 1947

[4] We prefer the terms vagotomy and vagus section to "vagus resection" and "vagectomy," since the physiologic effect is produced by division of the nerves and partial excision is added only to minimize regeneration

[5] We are indebted to the members of the surgical resident staff for routine work that has made this study possible and to Drs J M Ruffin and R C Smith, who have worked with our group as medical consultants

during the early months after operative intervention by 2 patients and later by another 2 patients, but only after heavy drinking. One patient who described recurring mild ulcer-like pain for thirteen months and occasional black stools had a persistent duodenal ulcer. A single episode of hematemesis occurred in 2 patients, seventeen and thirty-seven days after vagotomy. There has been no other recurrence of bleeding. Frequent vomiting continued in 1 patient with an adequate gastroenterostomy Seven patients described occasional vomiting during the first several months.

TABLE 1—*Type of Operation Employed in Fifty-Seven Patients, Location of Ulcers and Duration of Symptoms*

	Number of Patients in Each Group	Average Duration of Symptoms, Yrs.
A Transthoracic vagotomy alone		
Duodenal ulcer *	32	10
Marginal ulcer after gastroenterostomy	3	8
Marginal ulcer after subtotal resection	6	14
Gastric ulcer	4	6
B Transthoracic vagotomy and gastroenterostomy		
Gastroenterostomy necessary after vagotomy (4 duodenal ulcers, 1 stoma, 1 gastric)	6	8
Gastroenterostomy performed at time of vagotomy (4 duodenal ulcers, 1 gastric)	5	16
Gastroenterostomy performed before vagotomy (1 duodenal ulcer and 1 prepyloric gastric)	2	25

* One patient with a duodenal ulcer present thirteen months after vagotomy was treated by subtotal gastric resection

Changes of body weight are summarized in table 2 *B*. The average reduction of weight from the maximum before or during the period of difficulty with ulcer preceding vagotomy was 24 pounds (11 Kg.). Of the 50 patients who gained weight after vagotomy, 21 regained their maximum weight. Six patients have lost weight. Four of these at four to six months have an average loss of 20 pounds (9 Kg.). The remaining 2 at eight and twenty-seven months have lost 8 and 6 pounds (3.6 and 2.7 Kg.).

Disability as judged by the patient is abstracted in table 2 *C*. After vagotomy 38 patients are able to work full time. Fifteen can work but half time. Of these each complained of weakness, 7 of pain in the incision and in the chest, 6 of nervousness and 1 of severe diarrhea. Of the 3 patients unable to work after vagotomy, 2 are incapacitated by weakness The third, a veteran totally disabled for thirty years, continues to complain of pain, weakness and nervousness

Statements concerning satisfaction with the results of surgical intervention are presented in table 2 *D*. Forty-eight patients are completely or moderately well satisfied because of relief of pain and ability to eat a less restricted diet. The only seriously dissatisfied patient is disabled by vomiting and aggravation of a chronic diarrhea which was present before the operation. Although he has been relieved of symptoms of ulcer for twenty-one months, hospitalization has been necessary on three occasions because of diarrhea and loss of weight.

COMPLAINTS AFTER VAGOTOMY

After vagotomy most patients have described new symptoms, which probably result from the removal of parasympathetic innervation of the upper part of the gastrointestinal tract (table 3). These symptoms did not ordinarily cause serious dissatisfaction. In a few cases, however, they were serious.

Forty patients experienced uncomfortable fulness of the stomach (table 3 *A*). Usually this occurred with or after meals. Occasionally during the early period after vagotomy it was persistent. Foul eructations (table 3 *B*) usually occurred infrequently and without reference to meals. They were described as a sour belch or as having a sulfurous odor like that of rotten eggs.

Of the 28 patients who described swelling or distention of the abdomen (table 2 *C*), 15 noticed difficulty only after eating or overeating. The remaining 13 described no relationship to meals and attributed distention to "gas." Colicky abdominal pain, usually described as mild "bowel cramps" or "gas pains," occurred in 38 patients (table 3 *D*). Seventeen noticed these pains only after eating.

Intolerance of food (table 3 *E*) has occurred infrequently. After undergoing vagotomy patients have been advised that they may eat an unrestricted diet but are to avoid overeating and that when gastric retention has developed they are to use a low residue diet. The majority have resumed an unrestricted diet without ill effect. Only 12 patients described intolerance to foods, such as coffee, onions, beans or watermelon. This intolerance continued in 7.

Temporary difficulty during swallowing was noted by 21 patients (table 3 *F*). The symptoms suggested that food had lodged in the lower part of the esophagus. One patient had such difficulty before the vagotomy was performed; it became less troublesome afterward.

TABLE 2—*General Clinical Results of Treatment in Fifty-Six Patients*

	Before Vagotomy, No of Patients	After Vagotomy, No of Patients
A Symptoms of ulcer		
Severe pain	44	0
Recurrent	13	0
Frequent	17	1
B Change of weight		
Decrease from maximum weight		
None	6	..
Less than 10 lbs (4 5 Kg)	6	..
More than 10 lbs (4 5 Kg)	44	..
Regained maximum weight	.	21
Change from weight at time of vagotomy		
Loss of weight	..	6
Gain of less th	..	25
Gain of more t	.	25
C. Ability to work		
Full time	6	38
Half time	26	15
Little or not at all	25	3
D *Evaluation by patient*		
Completely satisfied	0	21
Moderately satisfied	0	27
Only partially satisfied	56	7
Dissatisfied		1

In the remainder of patients the trouble developed after the operation. One patient experienced it for five days during the period of hospitalization immediately after operative intervention. Two described it as occurring once or twice two or three weeks after operation and lasting a minute or two. One was readmitted two weeks after vagotomy with complete obstruction which had been present four days. There was decided narrowing of the lumen of the esophagus extending the full length of the operative site. This subsided spontaneously after several days. There was no residual constriction by fluoroscopy. Eleven described minor difficulty with swallowing as occurring soon after the operation and lasting several weeks; 3 described it as lasting several months, and 3 as continuing at four, five and seven months, although with decreasing frequency and severity. Roentgenologic examination of the esophagus of each of these patients at three months and later did not reveal evidence of obstruction or achalasia.

Table 3.—*Complaints of Patients After Transthoracic Vagotomy (Fifty-Six Patients)*

	Difficulty During 1st 3 Mos., No of Patients	Persisting Difficulty, No. of Patients
A. "Fulness" of the stomach	40	16
B. Eructation with a "rotten egg" taste or odor	26	15
C. Swollen abdomen	28	14
D. Collcky abdominal pain		
Frequent or daily	13	10
Occasional or periodic	25	12
E. Intolerance of certain foods	12	7
F. Transient obstruction of lower esophagus	21	0
G. Episodes of acute abdominal pain	..	6

Episodes of acute abdominal pain (table 3 *G*) occurred after vagotomy in 6 patients and necessitated their admission to the hospital. Although the onset and course varied from patient to patient, certain symptoms and observations were similar. The pain was intense and colicky; nausea or vomiting developed; food or alkali gave no relief, and the abdomen was moderately distended. Roentgenologic examination revealed gas in the stomach or colon. Sounds of intestinal movement were exaggerated and borborygmus usually occurred. Leukocytosis or elevation of temperature did not occur. In 4 patients symptoms were so severe that an exploratory laparotomy was considered. In no instance was the cause of the pain adequately explained.

The onset and duration of the pain varied. One patient had recurring attacks during the third month after operation, each followed by diarrhea. A second experienced severe pain in the lower part of the abdomen and back ten months after operation. Both recovered spontaneously and have not had recurrence. The third patient experienced severe colicky pain in the lower part of the abdomen eighteen months after vagotomy. The symptoms subsided within forty-eight hours. A fourth returned twenty-eight months after vagotomy with lower abdominal pain which had persisted for six weeks and which he stated was not like his previous ulcer pain. This patient is of interest since he had a nonfunctioning gastroenterostomy stoma at the time of operation and three months later. After thirteen months fluoroscopy revealed a poorly functioning stoma with star-shaped mucosal folds resembling a healing ulcer of the stoma. At the time of the attack of abdominal pain thirteen months later, the function of the stoma had improved and there was less evidence of a mucosal defect.

The fifth patient returned repeatedly with episodes of acute abdominal pain. After four months an incarcerated Meckel's diverticulum was removed and a pyloroplasty was performed to relieve retention distal to a high gastroenterostomy. Symptoms continued, and twelve months later a laparotomy was performed and adhesions about an old gastrocolic fistula were divided. Symptoms recurred until twenty months after the vagotomy and then subsided. There was no evidence of recurrent ulcer by operative or by roentgenologic examination.

The sixth patient began having episodes of colicky abdominal pain two months after vagotomy, and they recurred at frequent intervals during the next eleven months. Occasional tarry stools were described, but there was no anemia. The last attack was the most severe and brought the patient to the hospital as a subject for emergency treatment. There was severe colicky upper abdominal pain, greatest on the left and also constant deep epigastric pain. The abdomen was moderately distended. The distention and colicky pain subsided spontaneously within three days, but the deep epigastric pain persisted. A fluoroscopic examination revealed a duodenal ulcer crater, and a subtotal gastric resection was performed.

It is of interest that 31 of 56 patients treated by vagotomy describe the passage of excessive amounts of gas through the rectum. This was more evident during the early months and later gradually subsided.

Patients have complained of general symptoms in addition to those presented in table 3. These did not seem to be related to alterations of gastrointestinal function.

Many patients complained of weakness before operative intervention was performed. Afterward, weakness was described during the first three months by 36 patients. It subsided in all but 9 during convalescence. Of these 9, 2 have diarrhea, 1 gastric retention necessitating a soft diet, 3 retention with frequent foul eructations and 3 abdominal distention and gas.

Nervousness has been listed as a major cause of disability by 13 patients and has persisted in all but 1. It is of interest that 2 have volunteered the statement that gas or distention makes them nervous.

Table 4.—*Change of Bowel Habit of Fifty-Six Patients with Vagotomy*

	Before Vagotomy, No. of Patients	After Vagotomy, No. of Patients
A. Persistent change		
Normal bowel habit	11	33
Constipation		
Continuous or recurrent at frequent intervals	37	1
Recurrent at occasional intervals	0	5
Diarrhea (severe)		
Continuous or recurrent at frequent intervals	1	4
Diarrhea (mild)		
Recurrent at occasional intervals	2	5
Tendency to soft or moderately frequent stools	0	8
Constipation and diarrhea		
Constipated but having occasional periods of diarrhea	5	0
B. Temporary change		
Diarrhea; severe, temporary	0	20

Each patient has had pain in the incision and the left side of the chest resembling that which occurs after any thoracotomy. Pain occurred immediately after operation, became more intense during the first week or two and then gradually subsided. Six patients described persisting discomfort and 2, numbness.

CHANGE OF BOWEL HABIT

Vagotomy usually effected a change of bowel habit. Patients were often constipated before operation. Their first stools afterward were usually normal or soft and frequent. The bowel habits before operation and four to thirty-one months afterward are compared in table 4 *A*. Eleven of the 56 patients had ordinary bowel habits before operation. Afterward 33 had normal habits. Thirty-seven had persistent difficulty with constipation before vagotomy. After operation constipation occurred infrequently.

In 4 patients a chronic diarrhea developed, with five to twelve stools a day. One patient with exacerbation of a preexisting gastrointestinal disturbance and with an adequately functioning gastroenterostomy has had diarrhea for twenty months. Another with an adequately functioning stoma after subtotal gastric resection was constipated before vagotomy and since then has had diarrhea for ten months. The remaining 2 had normal bowel movements before operative intervention. One had a gastroenterostomy one month before vagotomy and has diarrhea, persisting at six months. The fourth patient did not have a gastroenterostomy but has had decided symptoms of gastric retention with food intolerance and recurrent diarrhea persisting twelve months.

Table 5.—*Changes of Acidity of Fasting Gastric Contents*

	Before Vagotomy, No of Patients	After Vagotomy 2 Wks. to 3 Mos., No of Patients	 3 Mos to 1 Yr., No of Patients	 1 to 2½ Yrs., No of Patients
A. Duodenal ulcer, vagotomy alone				
Patients tested	32	32	23	7
No free HCl	0	21	9	4
Free acid less than 30 units	8	8	14	2
Free acid more than 30 units	24	3	0	1
B. Gastroenterostomy and vagotomy				
Patients tested	12	12	9	2
No free HCl	0	9	7	1
Free acid less than 30 units	5	3	2	1
Free acid more than 30 units	7	0	0	0
C. Vagotomy after subtotal resection				
Patients tested	6	6	5	1
No free HCl	3	6	5	0
Free acid less than 30 units	1	0	0	1
Free acid more than 30 units	2	0	0	0
D Gastric ulcer, vagotomy alone				
Patients tested	4	4	3	..
No free	2	3	1	..
Free ac	1	1	2	
Free ac	1	0	0	.

Five patients have mild persistent or recurrent diarrhea with as many as three or four movements a day. Eight have soft stools once or twice a day. Some patients with diarrhea state that the stools are lighter than normal in color.

In addition to the persistent change of bowel habit just described (table 4 *A*) a temporary period of diarrhea with as many as six to fourteen stools a day occurred in 20 patients (table 4 *B*). In 3 it appeared within ten days of the operation and in 16 during the first weeks of convalescence. Diarrhea usually lasted several days to a week. Most patients had a single episode, but a few had several. This temporary diarrhea occurred during the first month in 11 patients. There were recurrences during the second month in 5, during the third month in 2 and for six months in 1. Subsequently 15 of the 20 patients with temporary diarrhea had normal bowel habits and 5 had a tendency to soft or moderately frequent stools.

During the periods of hospitalization before and after vagotomy special studies have been performed by the co-authors of this paper or under their direction. Ideas for study or for interpretation of results have come from individuals or have originated in group discussions. Each study will, therefore, be abstracted under the names of the co-authors, who will later publish detailed reports.

STUDIES OF GASTRIC SECRETIONS (H. M. TAYLOR)

Secretions of the fasting stomach and secretions aspirated before and after stimulation by histamine, insulin hypoglycemia or caffeine were usually readily obtained and analyzed before vagotomy. After operation suction tubes occasionally became blocked by particles of food present in the stomach long after meals. Lavage of the vagotomized stomach is often difficult because of retained gastric content, and some samples of gastric secretions were contaminated by particles of food. Frequently bile was present in samples obtained after the operation. With due allowance for these difficulties the following results seem reasonably reliable.

The volume and acidity of secretions obtained during a continuous twelve hour overnight aspiration were determined before and after vagotomy in 54 patients. The average volume of gastric fluid of the group of 32 patients with duodenal ulcer and vagotomy alone was reduced from 888 cc. before operation to 340 cc. immediately afterward. The average of 17 patients tested between three months and one year was 226 cc. The average of 6 tested between one and two and one-half years was 346 cc. Reduction of volume also occurred in the patients with gastroenterostomy, subtotal resection or gastric ulcer.

Changes of acidity are presented in table 5. For convenience the numbers of patients having no free acid, less than, or more than 30 clinicial units are presented rather than individual acidity values. The individual values used to construct this table were obtained by analyses of samples from overnight suctions and fasting samples obtained before routine tests. Occasionally unexplained variations occurred in consecutive fasting samples. These are not included in the grouping presented in table 5. It is evident that the number of patients with no free hydrochloric acid or less than 30 clinical units increases after vagotomy and that among the 10 patients tested after one to two and one-half years only 1 has more than 30 units.

Responses to histamine, caffeine and insulin have varied. Before vagotomy histamine usually produced a pronounced elevation of free hydrochloric acid in gastric secretions. Afterward there was little or no response to histamine in half of the patients. Insulin hypoglycemia or caffeine usually produced a great increase in free acid before vagotomy. Afterward the response was variable; most patients had no increase of free acid, some a moderate increase and few a decided increase. We do not know why these variations occurred and have not yet repeated these tests under experimental conditions that permit evaluation of the possible roles of obstruction, retention or rapid emptying of the stomach.

In general values for combined acid in fasting specimens are higher after vagotomy than they were before operation.

Serial determinations of free hydrochloric acid and hydrogen ion concentration, made during operation on 4 patients, revealed a prompt cessation of secretion of free acid after division of the nerves.

STUDIES OF GASTRIC MOTILITY (HESSER AND BAYLIN)

Intragastric Balloon Studies

Fluctuations of total intragastric pressure were measured by introducing a rubber balloon into the stomach, connecting it to a recording bromoform manometer and inflating it at two or three minute intervals with successive 50 cc. increments of air to a volume of 300 cc. Recordings were continued forty-five minutes to three hours. This technic differs from that used by others,[6] who employed balloons inflated only to 50 cc. and recording tambours. The results have also differed. We have not controlled by use of the fluoroscope the position of the balloons in the stomach or the amount of retention which may have been present in some patients even though they had been fasting twelve hours before each test. Our results have, nevertheless, been consistent.

Thirty patients were tested before vagotomy, 42 immediately afterward, 34 between three months and one year and 11 between one and two and one-half years. For convenience intragastric pressures recorded by the bromoform manometer have been converted into equivalent values of water and will be presented as centimeters of water. The pressures necessary to inflate the balloons to a volume of 300 cc. before and after they were placed in the stomach varied from 4.0 to 5.8 cm. Additional pressure on the balloon when placed in the stomach is defined as total intragastric pressure. The level of pressure observed during intervals between contractions is defined as resting pressure. This pressure is caused by partial contraction of the smooth muscle of the gastric wall on the stomach content. Fluctuations of total intragastric pressure above or below this level are defined as waves of gastric contraction. For convenience, values will be presented as the average of pressures of all patients tested during each time period before and at intervals after vagotomy.

The average resting pressure of the patients who had vagotomy alone for duodenal ulcer was 4.0 cm. before vagotomy and increased to 8.2 cm. during the first two weeks afterward. At three months to one year the average increased to 8.5 cm. and at one to two and a half years to 10.5 cm. Conversely, the amplitude of gastric contraction waves decreased but waves became more frequent and rhythmic with a persistent pattern. The average height above the resting pressure of waves of gastric contractions in this group of patients was 20.5 cm. before vagotomy and 1.6 cm. immediately afterward. At three months to one year, and also at one to two and a half years, the average was 2.8 cm. Similar increases of resting pressure and persistent decreases in the amplitude of contractions occurred in patients with gastroenterostomy and with gastric ulcer. There was an occasional exception, particularly in the subtotal resection group in which rhythmic contractions before vagotomy were low.

Before vagotomy sudden stretch produced by introduction of 50 cc. of air into the balloons produced a contraction, or stretch reflex, evidenced by an increase of intragastric pressure lasting five to fifteen seconds. This did not occur after vagotomy. Also, prolonged three or four minute increases of intragastric pressure, or so-called tonus contractions, occurred in 2 patients before operation and were seen in 3 afterward.

Roentgenologic Examination After the Ingestion of Barium

Vagotomy has effected remarkable changes of peristalsis, the amount of retention six hours after the ingestion of barium and the size of the stomach. These changes have been observed during fluoroscopic examination and recorded by films. Studies made on 56 patients before and at intervals after operation are presented in table 6. For convenience, peristalsis has been described as active or sluggish, retention as greater or less than 30 per cent at six hours and the size of the stomach as within normal range or enlarged.

TABLE 6.—*Changes of Peristaltic Activity, Retention and Size of Stomach (Roentgenologic Examination After Barium Meal)*

		After Vagotomy		
	Before Vagotomy, No. of Patients	2 Wks. to 3 Mos., No. of Patients	3 Mos. to 1 Yr., No. of Patients	1 to 2½ Yrs., No. of Patients
A. Duodenal ulcer, vagotomy alone				
Patients tested	32	23	24	8
Peristalsis				
Active	32	3	6	2
Sluggish	0	25	18	6
6 hour retention				
<30 per cent	32	9	8	3
>30 per cent	0	19	16	5
Size of stomach				
Normal range	30	7	8	5
Enlarged	2	21	16	3
B. Gastroenterostomy and vagotomy				
Patients tested	14	12	10	3
Peristalsis				
Active	9	0	4	1
Sluggish	5	12	6	2
6 hour retention				
<30 per cent	10	6	9	2
>30 per cent	4	6	1	1
Size of stomach				
Normal range	5	3	8	3
Enlarged	9	9	2	0
C. Vagotomy after subtotal resection				
Patients tested	6	6	5	1
Peristalsis				
Active	0	0	0	0
Sluggish	6	6	5	1
6 hour retention				
<30 per cent	6	6	4	1
>30 per cent	0	0	1	0
Size of stomach				
Normal range	6	5	4	1
Enlarged	0	1	1	0
D. Gastric ulcer, vagotomy alone				
Patients tested	4	4	4	..
Peristalsis				
Active	3	2	2	..
Sluggish	1	2	2	..
6 hour retention				
<30 per cent	4	2	2	..
>30 per cent	0	2	2	..
Size of stomach				
Normal range	4	1	2	..
Enlarged	0	3	2	..

Before operative intervention peristalsis was active in the 32 patients with duodenal ulcer subsequently treated by vagotomy alone (table 6 *A*), variable in patients with stoma or gastric ulcer or with obstruction later treated by gastroenterostomy (table 6 *B* and *D*) and sluggish or absent in those with stoma ulcer after subtotal resection (table 6 *C*). In most of the patients after section of the vagus nerves peristalsis was sluggish or apparently absent. Peristalsis persisted actively but apparently abnormally in a few. Deep, forceful antral contractions were seldom seen. Variations of activity were often observed in consecutive examinations of the same patient.

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[6] (*a*) Starr, I., and Ferguson, L. K.: Beta Methylcholine Urethane: Its Action in Various Normal and Abnormal Conditions, Especially Post Operative Urinary Retention, Am. J. M. Sc. **200**: 372-385, 1940. (*b*) Moore, Chapman, Schulz and Jones.[3]

Before the operation, the retention of barium at six hours occurred in only 6 of the 32 patients with duodenal ulcer (table 6 *A*) who did not have subsequent gastroenterostomy. These 6 had retention varying from 5 to 30 per cent. Retention was not present preoperatively in the patients who had resection or who had gastric ulcer. It was usually present preoperatively only in those patients (table 6 *B*) subsequently treated by both vagotomy and gastroenterostomy. After operation, with few exceptions, there was a remarkable increase in the amount of barium retained at six hours. Twenty-three of the 36 patients with duodenal or gastric ulcers treated by vagotomy alone had 50 to 100 per cent retention at six hours, and many had retention at twenty-four hours. Complete retention in another 5 patients necessitated the secondary gastroenterostomy that placed them in group *B*, table 4.

Prior to operation moderate enlargement of the stomach was present in only 2 of the 32 patients with duodenal ulcer who did not have subsequent gastroenterostomy (table 6 *A*). Enlargement occurred preoperatively in 9 of the patients (table 6 *B*) who subsequently had gastroenterostomy at the time of or after vagotomy. Enlargement of the stomach was not present before vagotomy in the resection or gastric ulcer groups. After section of the vagus nerves enlargement of the stomach frequently occurred. Enlargement varied from twice the normal or preoperative size to three or four times normal. Three patients returned with acute dilatation of enormous size. Retention was most frequent and persistent in patients with duodenal ulcer treated by vagotomy alone, but it also occurred in some patients with gastroenterostomy or gastric ulcer.

It is of interest that significant change of peristalsis, retention or size of the stomach did not occur in 4 of the 5 patients with stoma ulcers that developed after subtotal gastric resection.

STUDIES OF SMALL INTESTINE AND COLON (RUNDLES AND BAYLIN)

Roentgenologic examinations of the small intestine were performed in 26 patients, of whom 12 were studied before as well as after vagotomy. Delay of emptying of the stomach after operation often made visualization of the small intestine difficult. In general after vagotomy transit through the jejunum was delayed, the caliber tended to increase slightly and the mucosal pattern tended to become coarser. No constant abnormality in the ileum followed the operation. The colon as visualized twenty-four hours after the ingestion of barium or by barium enema showed no definite abnormality.

NEUROLOGIC STUDIES OF ULCER PAIN (F. H. HESSER)

Each patient has been relieved of ulcer pain immediately after operative intervention and before healing could occur. This suggests the possibility of interference with pain pathways mediated by the vagus. To examine this possibility the vagus nerves below the diaphragm were stimulated by crushing in two patients under spinal anesthesia. Pain did not develop. In 2 others also under spinal anesthesia the nerves were exposed in the lower thorax and stimulated electrically and by crushing. These patients complained of pain referred to the neck and not to the abdomen. Stimulation of the intact left vagus in the neck of 1 patient under local anesthesia produced pain referred to the neck and also "heart burn" and "sour stomach." It is a common observation that spinal anesthesia high enough to block splanchnic pathways relieves pain caused by penetrating ulcer. Major visceral pain pathways, therefore, course through the splanchnic nerves and are intact after vagotomy.

Of the 56 patients, 4 had no free hydrochloric acid and 7 had little free acid before operation. Since they were relieved of pain afterward, the reduction of acidity which usually occurs after vagotomy cannot be a sole explanation for their relief from pain.

It is of interest that in 1 patient treated during the last three months a duodenal ulcer healed but a gastric ulcer developed. The crater was found incidentally during routine fluoroscopic examination. This ulcer did not produce pain and healed spontaneously.

EFFECT OF PARASYMPATHOMIMETIC DRUGS

Several parasympathomimetic drugs have been studied. Mecholyl chloride (acetyl-beta-methylcholine), Doryl (carbaminoylcholine chloride) and Urecholine (carbaminoyl-beta-methylcholine chloride) have each activated gastric motility after vagotomy as judged by fluoroscopic examination, and neostigmine methylsulfate has occasionally produced moderate activity. Studies using 300 cc. intragastric balloons reveal little or no restoration of activity after Mecholyl, moderate restoration after Doryl, good restoration after Urecholine and no restoration with neostigmine methylsulfate. The clinical use of Urecholine[7] was first studied extensively by Starr and Ferguson.[6a] Its action in vagotomized patients has been described by Machella, Hodges and Lorber,[8] who encouraged our experiments.

The administration of 5 mg. of this drug hypodermically produced a feeling of warmth and later perspiration. Fluctuations of intragastric pressure decreased or absent after vagotomy as recorded by balloons are increased or partially restored by the hypodermic injection of a 5 mg. dose and also usually by the oral administration of 20 or 30 mg.[9] Gastric peristalsis observed during fluoroscopic study is increased by effective doses of the drug hypodermically and also in most cases orally. Urecholine (30 mg. orally) was given to 8 vagotomized patients in whom gastric retention at six hours varied from 50 to 85 per cent. Retention decreased to less than 10 per cent in 6 patients and was unchanged in 2. In these 2 subjects the subsequent injection of 5 mg. of the drug hypodermically produced prompt emptying of the stomach. Transit of barium through the small intestine, usually delayed after vagotomy, was accelerated by effective doses of the drug given by injection or orally. The caliber and pattern of the jejunum reverted to normal.

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[7] This drug was furnished by Merck & Co., Inc.

[8] Machella, T. E.; Hodges, H. H., and Lorber, S. H.: The Restoration of Gastric Motility by Urethane of B-Methyl Choline After Section of the Vagus Nerves for Peptic Ulcer, Gastroenterology 8: 36-51, 1947.

[9] Some of these experiments have been performed by Dr. R. W. Postlethwait.

Injection of 5 mg. of Urecholine occasionally slightly increased the free hydrochloric acid in gastric secretions of 5 normal and of 5 vagotomized patients.

Urecholine 5 mg. given hypodermically to 4 patients with peptic ulcer accentuated pain on 1 occasion. This result could not be repeated after several days and did not occur in the other 3 patients, even though forceful gastric peristalsis developed. Ulcer-like pain was not produced after vagotomy by single injections of the drug.

Hypodermic injection of 5 mg. of Urecholine or oral administration of 10 mg. three times a day has been employed during the immediate postoperative period in 7 patients. Symptoms of retention or distention otherwise frequently observed were less evident.

Ten milligrams of the drug was given orally three times a day as a symptomatic treatment to 12 patients with complications present one month to two years after operative intervention. In 4 there was apparently no effect and treatment was discontinued. Eight reported relief from abdominal "gas pains" or "rumbling." Four with diarrhea noted decrease in the frequency of movements or a tendency toward constipation. They also noticed that their stools became darker and more normal in color and consistency. Only 5 of the 8 patients who noticed an effect from the drug are now taking it regularly. Of the 3 who stopped, 2 had had temporary recurrence of ulcer-like pain and 1, nausea after the morning dose. Symptoms of warmth and sweating are not evident after the oral administration of 10 mg. of the drug three times a day.

COMMENT

With 1 exception transthoracic vagotomy has evidently effected healing or quiescence of duodenal, marginal or gastric ulcers in 56 patients during a period of observation of four to thirty-one months. This is best evidenced by lasting relief from the pain, hemorrhage or vomiting which was present before operative intervention. Patients have usually gained weight and returned to work. With 8 exceptions they are satisfied.

Transthoracic vagotomy has, nevertheless, several disadvantages. The transthoracic approach does not permit visualization of abdominal viscera. It must be supplemented by exploratory laparotomy unless diagnosis of ulcer is certain and malignancy improbable.

Another disadvantage is the occurrence of obstruction at the outlet of the stomach with retention of gastric content and dilatation of the stomach. Distention, accumulation of fluid and gas and loss of normal peristaltic pattern make these stomachs appear atonic during fluoroscopic examination. Resting intragastric pressure as judged by balloon studies, however, is increased after vagotomy and tonus contractions have occurred. The increase of intragastric pressure may be considered as representing an increase of the partial contraction of smooth muscle of the stomach wall or of the "tone" providing other factors that might increase pressure are controlled. Such factors could be changes of intra-abdominal pressure effected by tone of abdominal muscles or distention of adjacent viscera or, in some patients, the hydrostatic effects of retained gastric content.

Gastroenterostomy relieves retention. It therefore seems probable that decrease or alteration of peristaltic activity together with obstruction at the outlet of the stomach are the important causes of retention and dilatation. In 6 patients in this series secondary gastroenterostomies have been required because of obstruction.

Obstruction may be caused by scar tissue or by inflammation. Often after vagotomy it is a result of malfunction of the physiologic sphincter at the outlet of the stomach. As revealed by fluoroscopic examination the contraction, or tone, of the sphincter may be abnormal after vagotomy. Also forceful peristaltic waves normally propel food to the sphincter and stimulate relaxation and opening. This ejection cycle is not initiated by the feeble or abnormal peristaltic waves which are present after a vagotomy has been performed. Such a physiologic obstruction necessitated a secondary gastroenterostomy in 1 patient with a gastric ulcer. It has also produced retention in 4 patients treated by vagotomy for conditions other than ulcer. One of these required secondary gastroenterostomy. This type of obstruction resembles that observed in animals. It can be relieved by restoring propulsive peristaltic activity with Urecholine. Fortunately the degree of obstruction varies from patient to patient and often does not cause serious difficulty.

Since obstruction and retention may be relieved by adequate gastroenterostomy, Dragstedt now uses this operation at the time of subdiaphragmatic vagotomy for the majority of his patients. In our series in 1 of 7 patients with duodenal or gastric ulcer there developed obstruction which required the performance of a secondary operation. This number may be decreased by use of parasympathomimetic drugs.

Another disadvantage of vagotomy is the occasional occurrence of diarrhea. Most patients are gratified by relief from constipation and the occurrence of normal or soft bowel movements. Temporary severe diarrhea occurred in 20 patients but subsided promptly. A few of these patients obtained relief by vomiting or after lavage and aspiration of foul retained gastric content. Only 4 patients in this series have had persistent, severe diarrhea. Three of these have adequate gastroenterostomies, and their bowel habit has improved after Urecholine has been administered to them orally.

In 6 patients there developed serious episodes of severe, colicky abdominal pain. Detailed examination did not reveal an adequate explanation of the colicky pain. One of these patients had a persistent duodenal ulcer and was treated by subtotal gastric resection thirteen months after vagotomy.

In most patients symptoms related to altered function of the gastrointestinal tract have not been serious. Malnutrition or specific deficiencies have been observed only in 1 patient with a preexisting diarrhea. Parasympathomimetic drugs, such as Urecholine, are being investigated as a treatment of gastric retention, diarrhea and gas pains. Although early results are encouraging, the ultimate utility of these drugs has not been determined.

It is of interest that temporary difficulty in swallowing occurred soon after vagotomy in 20 patients. It was caused in some by temporary narrowing of the esophagus at the operative site and possibly in others by retention of gas or food in the stomach. Achalasia has not occurred as judged by negative roentgenologic examinations and by failure of persistence of symptoms.

A single explanation for healing of ulcer or relief from pain has not been found. Many changes have occurred that might favor healing. Most patients have reduction of acidity or achlorhydria. Also retention of gastric content may favor neutralization of digestive juices. Regurgitation of duodenal juices or bile is frequent after vagotomy. Values for combined hydrochloric acid have increased. Reduction or alteration of gastric peristaltic activity as judged by fluoroscopic examination has occurred after vagotomy. Reduction of amplitude of gastric contractions as judged by balloon study has been more consistent than has reduction of acidity. Nevertheless, ulcers were present without demonstrable peristaltic activity or free hydrochloric acid in some of the patients with gastric ulcer or with stoma ulcer after subtotal gastric resection. In these patients ulcers healed after vagotomy without demonstrable change of motor or secretory activity. Clinical studies of changes of circulation at the site of the ulcer have not been possible. It seems evident by fluoroscopic examination that forceful thrust of gastric content into the area of the ulcer seldom if ever occurs after a vagotomy has been performed. Healing of the ulcer and relief of pain are probably caused by a combination of beneficial changes.

Although transthoracic vagotomy effects healing or quiescence of peptic ulcer, complications occur that limit its clinical application. Until the cause and treatment of these complications are more thoroughly investigated and until results are observed through a longer period of time, final conclusions are not warranted. The following conclusions are, therefore, tentative.

CONCLUSIONS

1. Healing or quiescence of duodenal or gastric ulcers has followed transthoracic vagotomy alone. Nevertheless, disturbances of gastrointestinal function, including gastric obstruction and retention, have occurred frequently and occasionally have produced serious complications. It seems probable, therefore, that vagotomy alone should not be used as a standard treatment for all duodenal or gastric ulcers resistant to medical management.

2. Healing or quiescence of stoma ulcer occurring in 6 patients after subtotal gastric resection has followed transthoracic vagotomy. Since complications caused by retention are less serious in these patients and since conventional surgical treatment has failed, vagotomy may be indicated as a standard treatment.

3. Transthoracic vagotomy combined with some form of gastroenterostomy has been followed by healing of ulcer in 12 patients in whom stoma ulcer has not as yet developed. The incidence of symptoms of retention in this group is low.

4. Alterations of the motor and secretory functions of the stomach have usually persisted as judged by examinations made in 11 patients one to two and one-half years after vagotomy.

AEROSOL PENICILLIN

Blood Levels of Penicillin Obtained by Inhalation of Aerosols Produced by a Combined Steam Generator and Aerosolizer, with the Use of Propylene Glycol, Tents and a Breathing Box

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Medicated aerosols afford a new and promising approach to the treatment of bronchopulmonary diseases.[1] Penicillin,[2] sulfonamide compounds,[3] "promin" (sodium p,p'-diaminodiphenylsulfone-N,N'-didextrose sulfonate)[4] and streptomycin[5] have been employed in this manner. Nebulization of the material with oxygen has been the method of application used by the majority of workers.

In recent communications[6] a combined steam generator and aerosolizer has been described, which is simple, effective, inexpensive and readily applicable for home and office use. Preliminary studies with this aerosolizer disclosed that satisfactory aerosols were readily obtained from solutions of theophylline ethylenediamine, epinephrine, sulfadiazine and penicillin—singly or in combinations.[7] Results of the present study have shown that the inhalation of aerosols of penicillin produces a concentration of the drug sufficient to make it effective for treatment not only of bronchopulmonary disease but also of infections in other systems of organs in which use of this antibiotic is indicated.

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MATERIALS AND METHODS

Hospitalized patients without known disease of the respiratory tract (except for 1 patient with asthma) served as subjects for the experiments. The calcium salt of penicillin[8] was dissolved in water or in propylene glycol before aerosolization. The blood levels for penicillin were determined in the earlier tests by the micromethod of Fleming.[9] Subsequently, they were estimated by the macromethod devised by Randall, Price and Welch.[10] The results obtained by the use of both these methods are recorded in this paper. Time intervals, as recorded, start with the beginning of inhalation. Control samples of blood prior to treatment with penicillin were analyzed in most cases for antibiotic activity, in order to evaluate properly the results obtained.[11] None of these control specimens displayed any inhibitory action on the growth and multiplication of the test organism.

The aerosolizer[12] used in these studies (fig. 1) has been described in detail elsewhere.[6] In operation, steam escapes from an electrically heated container through a fine aperture in the nozzle. As it passes over a tube which connects the nozzle with the medicament, the steam sucks up and nebulizes the medicament. Penicillin is unaltered by this brief contact with the steam.[6a] The medicated steam expands on emerging from the spout and is, therefore, cool and harmless for inhalation.[13] A screw valve regulates the onset and rate of flow of the medicament. Safety devices include an escape valve for excess steam and an automatic cutoff of current when all the water has been utilized.

The methods of confining and utilizing the aerosol are described in connection with the results obtained.

RESULTS OBTAINED BY VARIOUS METHODS OF INHALATION OF AEROSOLS OF PENICILLIN

1. *Method of Open Inhalation.*—In the application of the open inhalation method, the patient sat about 6 to 8 inches (15 to 20 cm.) away from the aerosolizer to inhale the aerosol, as it was produced, for approximately fifteen minutes per treatment (fig. 2). The steam was cool and harmless at this distance. There was a great loss of penicillin from dissipation (the rate of production of aerosol was greater than the rate of inhalation) and from condensation on the patient's face. Nevertheless, penicillin in measurable quantities reached the systemic circulation.

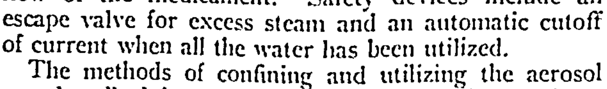

Fig. 1.—A combined steam generator and aerosolizer for the production of medicated aerosols.

Although extremely wasteful, this method has the advantage of simplicity. Self administration is practical and is readily learned by the patient. The penicillin is dissolved in 20 cc. of water or isotonic solution of sodium chloride.

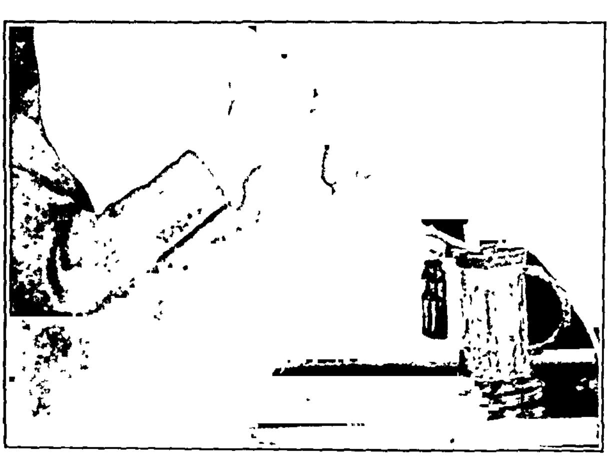

Fig. 2.—Open inhalation of aerosol of aqueous penicillin.

Comment: Subsequent to the aerosolization of 100,000 units, an effective level of penicillin in the blood can be maintained for one and a half hours.

2. *The Air-Tight Chamber.*—In this method, the patient was confined to a chamber 6 by 6 by 7 feet (183 by 183 by 213 cm.), in which 180,000 units of penicillin in 20 cc. of propylene glycol were aerosolized. A blood level of 1.0 unit was obtained in the first half hour (Fleming's method) and none thereafter, although the patient remained in the chamber for over two hours. It is of clinical interest that this man, who suffered from severe asthma, was free of symptoms for three months after this treatment. When the asthma returned, the treatment was repeated with improvement which lasted a few weeks. The method was discontinued, however, as being excessively wasteful of penicillin.

3. *The Tent Method.*—Here, an attempt was made to conserve the aerosol by confining it in a tent which covered the head and thorax of the patient. Originally an oxygen tent was used, but subsequently a lighter, portable tent of a transparent plastic material was substituted.[12] It measured 28 by 28 by 48 inches (71 by 71 by 122 cm.), which allowed the edges of the tent to be tucked under the mattress and provided enough space for the patient to sit erect, if desired (fig. 3). The aerosol was blown into the tent through an aperture which was left open for adequate ventilation. Oxygen was not administered. The aerosol was not blown directly toward the patient, as in the open method, but rather into the tent for general distribution. The distance between the patient and the aerosolizer was about 24 inches (61 cm.).

An aqueous aerosol of penicillin was used, and the patient was kept in the tent for three hours (table 2).

Comment: Rather high and prolonged levels of penicillin in the blood were obtained by the micromethod of Fleming, as compared with the levels obtained by the macromethod of Randall, Price and Welch. Penicillin in aqueous solution did not form a stable aerosol, as evidenced by the fact that the mist produced by the aerosolizer disappeared within about ten minutes after it was blown into the tent. Examination of the inner surface of the tent showed that much of the aerosol had condensed.

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[8] Supplied by Dr. C. E. Duchess, Schenley Laboratories, Inc.

[9] Fleming, A.: Micromethods of Estimating Penicillin in Blood Serum and Other Body Fluids, Am. J. Clin. Path. **15**: 1, 1945.

[10] Randall, W. A.; Price, C. W., and Welch, H.: The Estimation of Penicillin in Body Fluids, Science **101**: 262, 1945.

[11] Chandler, V. L.; Price, C. W., and Randall, W. A.: Control and Evaluation of Blood Serum Assays for Penicillin, Science **102**: 255, 1945.

[12] The Kaz Manufacturing Company, 540 Twelfth Avenue, New York.

[13] Moritz, A. R.; Henriques, F. C., and McLean, R.: The Effects of Inhaled Heat on the Air Passages and Lungs: An Experimental Investigation, Am. J. Path. **21**: 311, 1945.

[14] Footnote deleted by author.

In a second series of experiments with the tent, an attempt was made to stabilize the aerosol by dissolving the penicillin in propylene glycol. That stabilization was achieved was proved by the duration of the mist in the tent, partially hiding the patient from view and lasting for about one-half hour. The degree of condensation in the tent was less than that observed after the use of an aqueous aerosol. The stability of the aerosol is further reflected in the high and continuous levels of penicillin in the blood (table 3).

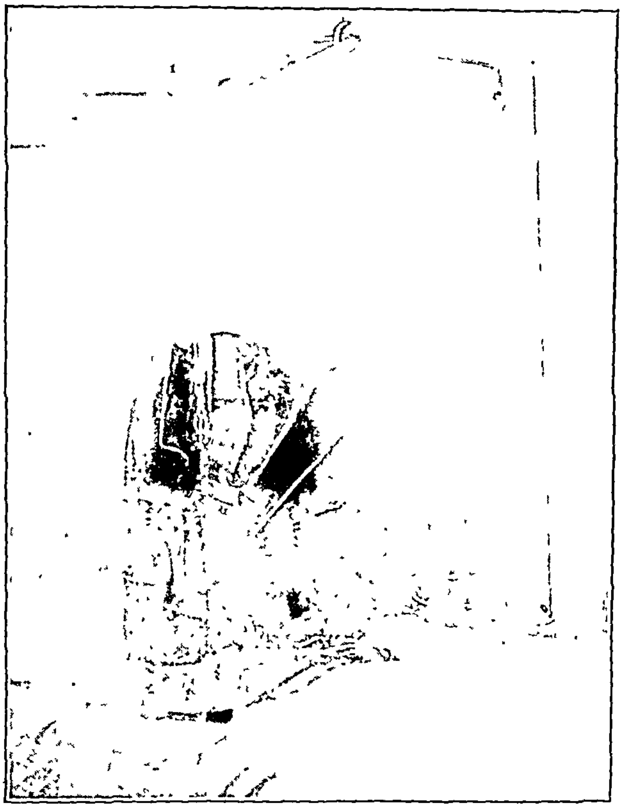

Fig. 3.—Portable translucent plastic tent for the administration of aerosol penicillin-propylene glycol

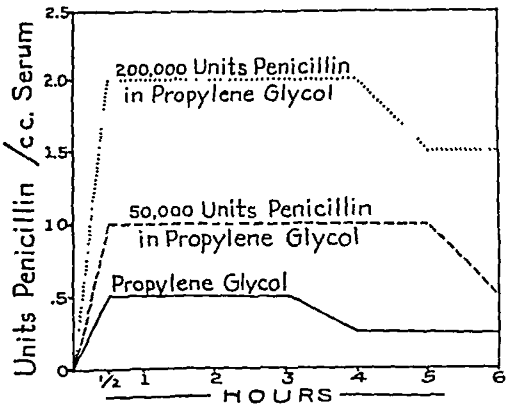

Fig. 4.—The effect of propylene glycol on the level of penicillin in the blood attained by inhalation from the breathing box.

Originally, the patients were kept in the tent for three hours, but later confinement for one hour proved sufficient. The temperature in the tent reached 90 F. and the humidity was 90 per cent during the period of aerosolization (fifteen to twenty minutes), but both fell rapidly as the steam was discontinued.

Comment: In evaluating penicillin blood levels, it must be remembered that we are dealing with a biologic, and not a chemical, test, which therefore is subject to many factors of error. There are variations in sensitivity of the testing organism, although the strain of Bacillus subtilis used in the method of Randall, Price and Welch is believed to be fairly constant in its response to penicillin. Then again, both testing methods employed in these experiments are dilution methods and are, therefore, subject to errors of 100 per cent or more. With this in mind, it can be reconciled that a higher penicillin blood level was obtained by the same patient (D.) inhaling the aerosol of 200,000 units of penicillin in the tent for one hour, than when in the tent under the same conditions for three hours. Contradictions of this type are noted frequently in determinations of penicillin blood levels.[15]

The conclusion can be drawn from the foregoing experiments that the use of a combined penicillin-propylene glycol aerosol under a tent provided a means of obtaining rapid and prolonged levels of penicillin in the blood. This method should be of particular value in the treatment of infants and children when frequent or continuous injections of penicillin are indicated.

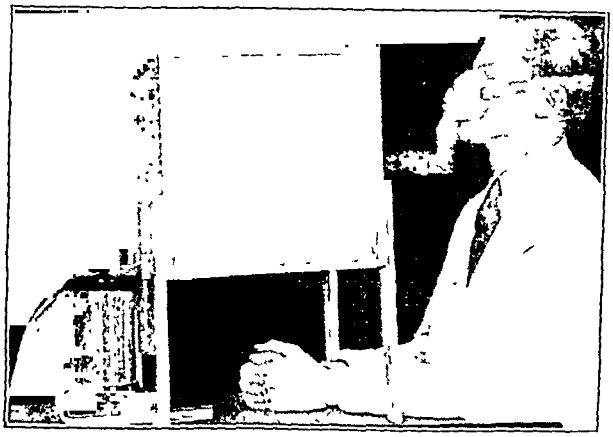

Fig. 5.—Breathing box used in administration of aerosol penicillin-propylene glycol.

4. *The Breathing Box.*—In view of the fact that some patients found the temperature and humidity of the tent uncomfortable, particularly in the summer, another method of conserving the penicillin aerosol was devised. This consisted of a box[12] into which the aerosol was blown, and from which the patient inhaled by means of a tube and mask (fig. 5). The box was made of plywood (metals increase condensation and destroy penicillin), which was treated on the inside with a water repellent to prevent the moisture from soaking into and warping the wood. The box was made air-tight except for a small aperture in the back, through which the aerosol was blown, and an opening in the front, through which inhalation was effected by means of a rubber tube and face mask. The mask was of the army aviator type, with a butterfly valve. Another valve between the mask and box permitted inhalation from the box but not exhalation into it, thereby avoiding an accumulation of carbon dioxide.

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[15] Cooke, J. V., and Goldring, D.: The Concentration of Penicillin in Various Body Fluids During Penicillin Therapy, J. A. M. A. 127: 80 (Jan. 13) 1945.

The legs of the box were of unequal length, so that it tilted toward one corner; this enabled the condensed aerosol to flow toward that corner, from which it could be collected (by means of an opening in the bottom) for the purpose of assay and for reaerosolization if desired.

The treatment lasted about one-half hour. It took about fifteen minutes to nebulize the penicillin and propylene glycol (19 cc. of propylene glycol was used, to which was added 1 cc. of glycerin to further stabilize the aerosol). The rest of the time was spent in consuming the contents of the box. The patient knew that he had exhausted the aerosol when the inhalation became considerably cooler and did not have the sweetish taste of the propylene glycol. Boxes of several sizes were tried. The best and most consistent results were obtained with the box measuring 12 by 12 by 12 inches (30 by 30 by 30 cm.), because it offered less surface for condensation of the steam and aerosol. The results obtained by this method are recorded in table 4.

By the use of the breathing box and penicillin in propylene glycol, 2 patients were treated, and blood studies were undertaken to determine how quickly the penicillin reached the systemic circulation, at what moment the peak concentration was reached and how long the penicillin remained in the blood. The data are recorded in table 5.

Table 1.—*Penicillin Level Obtained in Serum by Open Inhalation of Aqueous Penicillin Aerosol*

		Aerosol		Penicillin in Serum, U./Cc				
				Time in Hrs.				
Method of Determination	Patient	Penicillin, U	Water, Cc.	½	1	1½	2	3
Micromethod of Fleming	A 1	50,000	10	1 024	0	0 023	0	1 024
	A 2	50,000	10	0 064	0	0 023	0	0
Macromethod of Randall, Price and Welch	B	50,000	10	0 400	0	0	0	0
	G	50,000	10	0 400	0	0	0	0
	D	100,000	10	1 200	1 0	0 6	0	0
	A	100,000	10	1 000	0 8	0 4	0	0

Table 2.—*Penicillin Level Obtained in Serum by Inhalation of Aerosol of Aqueous Penicillin Blown into Tent*

		Aerosol		Penicillin in Serum, U./Cc						
				Time in Hrs.						
Method of Determination	Patient *	Penicillin, U.	Water, Cc	½	1	2	3	4	5	6
Micromethod of Fleming	C 1	50,000	10	1 024	1 024	0 064	0 256	0	0 256	0 128
	C 2	100,000	10	2 048	1 024	2 048	0 016	0	0	0
	C 3	200,000	10	0 512	0 512	0 128	0 512	0	0 064	0
Macromethod of Randall, Price and Welch	D	50,000	10	0	0	0	0	0	0	0
	R	100,000	10	0 060	0	0	0	0	0	0
	G	200,000	10	0 060	0 030	0	0	0	0	0

* Patient in tent for three hours

Table 3—*Penicillin Level Obtained in Serum by Inhalation of Aerosol of Propylene Glycol-Penicillin Blown into a Tent Confining the Patient*

		Aerosol				Penicillin in Serum, U /Cc						
						Time in Hrs						
Method of Determination	Patient	Penicillin, U	Propylene Glycol, Cc	Glycerin, Cc	Hours in Tent	½	1	2	3	4	5	6
Micromethod of Fleming	C 1	180,000	18	0	3	1 020	4 096	2 048	2 048	2 048	0 128	0 128
	H	180,000	18	0	3	0 064	0 128	0 128	0 064	0 064	0 128	0 128
	C.2	100,000	10	0	3	0 128	0	0	0 064	0	0	0
Macromethod of Randall, Price and Welch	D	50,000	19	1	3	0 250	0 031	0 031	0 031	0 031	0	0
	M	100,000	19	1	3	0 500	0 500	0 062	0 031	0 031	0 031	0
	D	200,000	19	1	3	0 250	0 250	0 250	0 250	0 250	0 125	0 062
	R	100,000	19	1	1	0 250	0 250	0 250	0 250	0 125	0 125	—
	D	200,000	19	1	1	0 125	1 000	1 000	0 500	0 500	0 500	0 500

Table 4—*Penicillin Level Obtained in Serum by Inhalation of Aerosol of Propylene Glycol-Penicillin from Breathing Box*

	Aerosol			Antibiotic Activity of Serum, U /Cc							
				Time in Hrs							
Patient	Penicillin, U.	Propylene Glycol, Cc	Glycerin, Cc	½	1	2	3	4	5	6	Size of Box
A.	50,000	19	1	1 0	1 0	1 0	1 0	1 00	1 00	0 50	Small
A.	100,000	19	1	1 0	1 0	1 0	1 0	1 00	0 50	0 50	Small
D	200,000	19	1	2 0	2 0	2 0	2 0	2 00	1 50	0 50	Small
D.	50,000	19	1	1 0	1 0	0 5	0 5	0 50	0 50	0 50	Large
D	0	19	0	0 5	0 5	0 5	0 5	0 25	0 25	0 25	Small
H	0	0	1	0	0	0	0	0	0	0	Small

Comment: Unquestionably, the breathing box was a distinct improvement over the methods previously mentioned. With it, effective levels of penicillin in the blood were quickly achieved (the peak was reached in thirty minutes) and were maintained for six hours. Indeed, such levels suggested the possible utilization of this method for the treatment of bacteremias and infections elsewhere in the body as well as of bronchopulmonary diseases

The breathing box conserved the penicillin-propylene glycol aerosol; nevertheless, some of the mixture condensed along with the steam in the box. The recovered condensate was still potent and could be reaerosolized, when desired. In two instances assays indicated that about 60 per cent of the penicillin remained in the condensate. Further studies with these condensates and on the results from reaerosolization are contemplated.

Control studies with aerosols of propylene glycol and glycerin, respectively, revealed that the former exerts some antibiotic activity in the blood when inhaled (table 4).

THE ANTIBIOTIC ACTIVITY OF PROPYLENE GLYCOL IN SERUM

Such unusually high and prolonged levels of penicillin in the blood were obtained in the experiments previously recorded that an explanation to account for them was sought and found in the behavior of propylene glycol. This chemical was chosen primarily because it is a good solvent for penicillin and because it produces a stable and long-lasting aerosol. Control studies (tables 4 and 6) indicated that the inhalation of this solvent imparted to the blood certain properties capable of destroying B. subtilis, the test organism.

Likewise, intravenous and intramuscular injections of 6 cc. of propylene glycol displayed the same phenomenon. The oral administration of propylene glycol in 2 instances did not impart any inhibiting action to the serum (table 6).

In vitro dilution studies of propylene glycol, to be reported elsewhere,[16] have indicated that whereas untreated human serum showed no antibiotic activity and the undiluted drug repeatedly displayed only slight antibiotic activity (equivalent to 0.031 penicillin units per 1 cc.), when it was diluted with serum in proportions of 1:10 to 1:10,000,000 all the dilutions showed an increase of antibiotic activity to 0.25 penicillin unit per 1 cc. Dilutions beyond this point displayed no bactericidal activity. Completely negative values were obtained by diluting the propylene glycol with water and with broth. Apparently, the propylene glycol and serum mixture, and not physical dilution, is the important factor.

Table 5—*Duration of Penicillin Blood Levels Obtained by Inhalation of Penicillin-Propylene Glycol Aerosol from Breathing Box*

		Penicillin Blood Levels, U/Cc									
		Time, Min.				Time, Hrs					
Aerosol	Patient	5	10	20	30	1	4	6	8	10	12
Penicillin, 50,000 U; propylene glycol,	R	0	0	0.250	0.5	0.5	0.5	0.5	0	0	0
19 cc; glycerin, 1 cc	D	0	0	0.125	0.5	0.5	0.5	0.5	0	0	0

Table 6—*Comparison of Antibiotic Activity of Serum Following Administration of Propylene Glycol by Various Routes*

			Antibiotic Activity of Serum, U/Cc							
			Before Treatment	Time in Hrs						
Method of Administration	Patient	Amount, Cc.		½	1	2	3	4	5	6
Inhalation (breathing box)	D	19	0	0.5	0.5	0.5	0.5	0.25	0.25	0.25
	R	19	0	0.5	0.5	0.5	0.5	0.50	0.50	0.50
	H	19	0	0.5	0.5	0.5	0.5	0.50	0.50	0.25
Intramuscular	D	6	0	0.5	0.5	0.5	0.5	0.50	—	—
Intravenous	R	6	0	1.0	1.0	1.0	1.0	1.0	—	—
Oral	G	10	0	0	0	0	0	0	0	0
	B.	10	0	0	0	0	0	0	0	0

These observations were not anticipated, although the bactericidal properties of the glycols in aerosol and in vapor form had been previously demonstrated by Robertson and his co-workers.[17]

Investigations are being continued to elucidate further the antibiotic properties of serum and propylene glycol mixtures, and to determine whether the same effect is exerted on organisms other than the one used in these tests (B. subtilis).

The studies on the penicillin level of the blood which have been recorded herein are not invalidated, however, by these observations of the effect of propylene glycol on serum. It will be noted in figure 4 that keeping the amount of propylene glycol constant and increasing the amount of penicillin increased the levels of penicillin in the blood. Propylene glycol contributed only a part of the total values obtained. Propylene glycol, therefore, not only is a good vehicle for the penicillin aerosol but serves as an adjunct in increasing the antibiotic properties of the blood.

COMMENT

The steam aerosolizer employed in this investigation has a number of features which make it preferable to other methods of aerosolization now in use. It is small, easily handled and inexpensive. Self administration of an aerosol can be quickly learned.[7a] It is possible, as well, that the warmth and moisture which the apparatus imparts to the aerosol enhances its absorption. The penicillin aerosol produced by this device is better tolerated by some patients than the aerosol produced by the oxygen nebulizer method. It is possible, in addition, to utilize this apparatus for mixed aerosol therapy. Combinations of theophylline ethylenediamine and penicillin have already been employed.[7a] Mixtures of sulfonamide compounds, penicillin and perhaps other chemotherapeutic agents, when aerosolized, should be highly effective in the treatment of respiratory infections.

To assure adequate utilization of an aerosol it is important to stabilize it and to conserve it by confinement. The formation and stability of a given aerosol, according to Abramson,[18] depend on the vapor pressure, the size of the droplets produced, the density of the material and its surface tension. Aqueous aerosols are ordinarily unstable unless other chemicals, such as glycerin, propylene glycol, urea or potassium chloride, are added.[18] It would seem, therefore, that the choice of propylene glycol as a solvent for the penicillin was a happy one. Not only did it produce a stable aerosol, but it contributed to the antibiotic properties of the blood as well. The stability was enhanced when glycerin (5 per cent) was added to the solution of penicillin and propylene glycol.

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[16] Prigal, S. J.; McGavack, T. H., and Bell, M.: The Effect of Propylene Glycol on the *Antibiotic Activity of Human Serum*, Am J. Med., to be published.

[17] (*a*) Robertson, O H., Bigg, E; Puck, T. T., and Miller, B.: The Bactericidal Action of Propylene Glycol Vapors on Micro Organisms Suspended in Air, J Exper. Med **75**: 593, 1943. (*b*) Robertson, O. H: Sterilization of Air with Glycol Vapors, *in* Harvey Lectures, Lancaster, Pa, Science Press Publishing Company, 1943, vol 38, p 227.

[18] Abramson, H A.: Improved Inhalational Therapy of Asthma, Arch Phys Therapy **21**: 612, 1940.

From the observations here reported, the maximum utilization of the aerosol was achieved by the use of the breathing box. This device prevented the dissipation of the aerosol into the atmosphere. The patient inhaled it at leisure. Clinically, it has been effectively employed by one of us (S. J. P.) in the prevention and treatment of sinus and bronchopulmonary infections.[19] Further conservation of the aerosol can be achieved by collecting the condensate and reaerosolizing it.

The tent method of confining the aerosol likewise proved effective. Thus, confinement of the patient for one hour in the tent provided effective penicillin blood levels of six hours' duration when using the penicillin-propylene glycol aerosol. This method should be particularly effective in the treatment of infants and children. The high humidity and temperature is objectionable, however, to some patients. Others tolerate it well. The transparent, lightweight, plastic tent employed in some of these studies is a decided improvement over the heavy, cumbersome and expensive tent devised for oxygen therapy. The problem of claustrophobia is greatly reduced by its complete transparency.

The method employing open inhalation of an aqueous aerosol, although wasteful of the aerosol, has the advantage of simplicity. Effective blood levels of penicillin have been obtained by this method, but these were of short duration. It should make a decidedly effective method of treatment in the home, when the cost of the drug is not prohibitive. It has been effective in the treatment of asthma, by the inhalation of theophylline ethylenediamine and ammonium chloride in aerosol form.[7a]

The air-tight chamber as a means of confining the aerosol gave, by comparison with the other methods employed, such poor results that the studies were limited to a single case. Knott and Clark,[2b] utilizing an electrically driven generator, nebulized penicillin into a closed chamber and demonstrated inhibition of the growth of organisms on an agar plate. Penicillin was detected (in both blood and urine) in subjects confined to this penicillin environment within fifteen minutes of exposure. These authors suggested this procedure as a means of controlling air-borne infection and for the mass treatment of infants and children in need of penicillin therapy. Sterilization of the atmosphere and prevention of cross infection can, however, be attained more economically and effectively by the use of glycol vapors [20] and ultraviolet radiation.[21]

The antibiotic properties imparted to the blood following inhalation of propylene glycol aerosol were not anticipated, in view of the observation of Robertson and his co-workers in their studies of the bactericidal properties of propylene glycol in liquid form.[17] They observed that, although this liquid revealed rather low germicidal properties, except in concentrations of 80 to 90 per cent, the aerosol was highly effective in concentrations of 1 Gm. of propylene glycol in 2 to 4 million cubic centimeters of air. The vapor of propylene glycol was even more effective, 1 Gm. in 10 to 20 million cubic centimeters of air sterilizing the atmosphere almost instantly against a variety of organisms and the virus of influenza. The lethal action of the glycol in vapor form was explained by the unusual affinity of this glycol for water, with which it is miscible in all proportions. When the vapor came in contact with an organism, it quickly reached a concentration of 70 to 80 per cent within the organism and thereby exerted its lethal action.

The foregoing does not seem to account for the phenomenon observed when propylene glycol is mixed with normal human serum or plasma. Apparently, a combination of the glycol and some factor in the serum is effected, which results in antibiotic activity of a degree possessed by neither. (Dilutions of one part glycol to ten million parts of serum inhibited the growth of a strain of B. subtilis.) Further investigations with serum and propylene glycol mixtures are in progress.

A comparison of the levels of penicillin in the blood obtained in this investigation, when using propylene glycol and the tent or breathing box, with those reported by others [2c] in this field reveals unusually high and prolonged blood levels. In a measure, this is accounted for by the antibiotic activity which propylene glycol imparts to the blood. It was observed, for example, that when propylene glycol (6 cc.) was injected intravenously (table 6), the antibiotic activity of the serum assayed in thirty minutes was 1 Oxford penicillin unit. This value persisted undiminished for the four hours of testing. This evidence of prolonged activity of the glycol may account for the sustained blood levels recorded in tables 3 and 4.

It is of interest to note that Hanzlik and his associates [22] reported that dogs continue to eliminate propylene glycol in the urine for twenty-four hours after a single dose. This delayed excretion of the drug should enhance its effectiveness as an antibiotic agent.

Initially, Fleming's micromethod [9] for penicillin assay, in which a hemolytic streptococcus (strain C 203M) is the test organism, was used in these studies. It was convenient for this type of study, since only a few drops of blood obtained from the finger were needed. This method revealed such high levels of penicillin in the blood that it was decided to check the results by employing another method.

The method devised in the laboratories of the Bureau of Food and Drug Administration by Randall, Price and Welch,[10] utilizing B. subtilis as the testing organism, was considered more reliable because it provided a sharp end point and the organism employed was both sensitive to penicillin and easily cultivated. This method was employed in the major part of these studies, despite the disadvantage of repeated venipunctures.

A comparison of the results obtained by these two methods show some degree of parallelism, although lower penicillin blood levels were recorded throughout with the Randall procedure. With the exception of the studies with aqueous aerosols of penicillin by the tent method (table 2), the results obtained with the Fleming procedure were corroborated. The original impression that prolonged and effective levels can be obtained in the blood by inhalation of combined penicillin-propylene glycol aerosol was confirmed.

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[19] Prigal, S. J.; Morganbesser, L. J., and McIntyre, F. P.: Penicillin Aerosol in the Prevention and Treatment of Respiratory Infections in Allergic Patients, J. Allergy, to be published.

[20] Robertson, O. H.; Hamburger, M.; Loosli, C. G.; Puck, T. T.; Lemon, H. M., and Wise, H.: A Study of the Nature and Control of Airborne Infection in Army Camps, J. A. M. A. **126**: 993 (Dec. 16) 1944.

[21] Wells, W. F.: Air Disinfection in Day Schools, Am. J. Pub. Health **33**: 1436, 1943.

[22] (a) Hanzlik, P. J.; Newman, H. W.; Van Winkle, W., Jr.; Lehman, A. J., and Kennedy, N. [illegible] d Excretion of Propylene Glycol and Some Other [illegible] & Exper. Therap. **67**: 114, 1939. (b) Hanzli [illegible] I.; Van Winkle, W., Jr., and Kennedy, N. K.: [illegible] Glycogenic Action of Propylene Glycol and Some [illegible] 67: 114, 1939.

The penicillin blood levels reported here must be considered not as absolute values (in view of the technical difficulties in obtaining accurate levels) but rather as an index that the aerosol method employed in this investigation is capable of providing therapeutic blood levels of considerable duration.

Unquestionably, in view of the facts here recorded, the diluent propylene glycol accounts in part for the high levels of penicillin in the blood. Another contributory factor which possibly accounts for the high blood levels obtained may be the use of steam. It may facilitate the absorption of penicillin by moistening and warming it as it is aerosolized.

One other factor must be considered in the interpretation of these prolonged blood levels, and that is the possibility of the retention of some of the penicillin somewhere in the bronchopulmonary system (in the alveoli or in nonfunctioning capillaries) from which it is gradually released. This is suggested by the results obtained with simple inhalation of aqueous aerosol of penicillin (table 1) in patients A. 1 and A. 2, in whom, after a zero level at the one hour interval, levels of 0.032 unit were obtained at the one and a half hour interval. The same phenomenon was noted in patients C. 1 and C. 2. Similar conclusions resulted from studies with aerosols of sodium sulfadiazine (Prigal and Speer[23]) in which prolonged blood levels were obtained after fifteen minutes of inhalation of 50 cc. of a 5 per cent solution of that drug. Chapple and Lynch reported similar results and concluded that the lung acted as a depot.[24] These observations need confirmation and, if corroborated, would emphasize the impression obtained from these studies that the lung is an excellent avenue for the introduction of medicaments intended for systemic dissemination.[1b]

The capacity of the lungs for absorption is explained by the fact that there are an estimated 300 million alveoli in the lungs, lined by capillaries which have the thinnest wall in the body ($\frac{1}{30,000}$ of an inch, or 0.00008 cm., thick), thus providing an estimated surface of 700 square feet (65 square meters) for absorption.[25]

The prolonged penicillin blood levels of therapeutic value described herein suggest also the possibility of treating nonpulmonary infections (systemic or localized) by inhalation instead of injection, in cases in which prolonged and continuous treatment with penicillin is indicated. The need for repeated painful injections or the troublesome continuous intravenous drip may thus be obviated. This should be of particular value in pediatric practice.

The use of mixed aerosols, which is feasible with this aerosolizer, opens up the possibility of the clinical application of these aerosols when the infection is of the mixed type and is not responsive to a single agent. Sulfonamide drugs, penicillin, streptomycin and other antibiotics can possibly be used in various permutations and combinations.

SUMMARY AND CONCLUSIONS

1. A combined steam generator and aerosolizer is described, which effectively produces aerosols of penicillin whose inhalation is capable of providing good therapeutic levels of this agent in the blood.
2. Penicillin dissolves readily in propylene glycol to form an effective, stable aerosol. The addition of glycerin (5 per cent) further stabilizes the aerosol.
3. Methods of conserving the aerosol for maximum utilization include simple open inhalation; inhalation within an air-tight chamber or transparent portable tent, and inhalation from a breathing box.
4. Unusually high and prolonged levels of penicillin were obtained in the blood when a penicillin-propylene glycol aerosol was inhaled within a tent or from a breathing box.
5. The tent method should be ideal for the treatment of infants and children or whenever continuous treatment with penicillin is indicated.
6. Propylene glycol, by inhalation of its aerosol and by intravenous or intramuscular injection, imparts to the blood serum a pronounced inhibitory action against a strain of Bacillus subtilis (an attribute not possessed individually by either the propylene glycol or the serum).

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[23] Prigal, S. J., and Speer, F. D.: Unpublished data.

[24] Chapple, C. C., and Lynch, H. M.: A Study of Sulfonamide Aerosol Inhalation, Am. J. M. Sc. **207**: 488, 1944.

[25] Harvey, B. C. H.: Simple Lessons in Anatomy, Chicago, American Medical Association, 1932.

PSYCHOGENIC FACTORS IN PELVIC PAIN

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In discussion on the subject of emotions and thought processes with medical students, I stress that much thinking is uncritical and emotionally determined. As an illustration, the students are asked for their concept of pain, as one of the symptoms most commonly met in the eliciting of complaints from patients. The usual response is to describe it as a neurophysiologic process caused by overstimulation. I counter with the statement that it is the conscious perception of such a process and that without consciousness it does not exist. Furthermore, under special circumstances it does not exist when consciousness is present. A member of the class is then called to the front and placed under hypnosis, given the suggestion that he will not feel pain and then asked to open his eyes. It is demonstrated to the class that he is fully aware of what is going on about him. Next, a sterile needle is pushed through his skin; he shows no sign of pain, denies that he feels it and manifests an obvious interest in the phenomenon. He is then put back to sleep and given the suggestion that he will feel pain. When the experiment is repeated his reaction is the expected one to such a stimulus. The students eagerly question him afterward, and his obvious sincerity convinces them that he had not felt the pain when told that he would not.

For some reason this demonstration disconcerts many of the students, because they feel they must revise their concepts of pain and their evaluation of it in their patients. I feel that such an attitude is a healthy one, and I follow this with a discussion on the emotional and psychogenic causation of pain and its relationship to the practice of medicine.

I hope that these students will remember in their practice of medicine that pain does not always mean

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organic pathologic conditions. One quickly learns in psychiatry that there is an "organ language." For ages people have expressed emotional reaction in terms of their bodily organs. How common and readily understood are such expressions as "heartache," "pain in the neck," "to have guts" and "my hair stood on end." Is there any doubt in one's mind but that such modes of expression grew out of the recognition over the years that emotional reactions can give rise to organic sensations and even discomfort? In this scientific age in which even the layman has more access to medical knowledge than did the medical student of fifty years ago, the average patient has extended his "organ language" to include medical and pathologic expressions.

There is an obvious reason why special areas of the body should be elected as the seat for the expression of certain emotional disturbances. The cardiovascular system is usually the structure for denoting anxiety and fear, because normally it is involved in those emotional states. The gastrointestinal system often is the site of reaction to states of disgust, aversion and deprivation, for such emotional states are commonly associated with the securing or rejection of food. So the pelvic contents, particularly the genitourinary system, is the site of reactions to sexual and marital difficulties.

It is generally stated that only 1 of 3 married women are adequately adjusted to marital relations. In psychiatric practice one often finds that many of these women have little awareness that they are poorly adjusted. They have been educated to believe that it is normal and nice not to have a sexual response. Therefore their maladjustment is not expressed in terms of maladjustment but in terms of "organ language" and symptoms.

During the war years I treated a large number of war wives whose husbands had been away from home for periods up to two and three years. There seemed to be two common factors in their seeking help—general emotional problems related to the separation and the discovery that their marriage had not been as successful as they had supposed. Both these factors tended to emphasize previous dysmenorrheas or other pelvic complaints. In 1 such case dysmenorrhea became greatly exaggerated. Previously the woman had been treated with hormones, with only temporary relief. Interviews brought out a sexual incompatibility with the husband and a lack of ability to achieve sexual orgasm. This was based on a building of resentment because of his overbearing attitude and domination. The conscious facing of this situation brought about a lessening of tension with a disappearance of symptoms. With his return, although the dysmenorrhea did not recur, she was still unable to respond sexually. However, she felt that with her understanding of the situation she could maintain the marriage and handle her reactions more satisfactorily.

The criticism should be raised as to what medical evidence psychiatrists can present in cases of this kind that emotional disorders can or do produce a dysfunction which gives rise to complaints. I think that many writers on psychosomatic subjects are making claims that cannot be verified by experiment. As yet, I know of no clear-cut experiment showing that emotional disorders have produced gastric ulcer, colitis or dysmenorrhea. On the other hand, I doubt if there are very many experimental demonstrations that retroversion or floating kidneys are responsible for the many disorders attributed to them.

In a recent article in THE JOURNAL A. E. Bennett[1] of Omaha reported on 150 patients who finally came to his psychiatric clinic. The 121 women had had a total of two hundred and five surgical treatments and three hundred and sixty-eight medical treatments before their disorder was recognized as psychiatric in nature. Is not this a reflection on the diagnostic acumen of the members of the medical profession? Perhaps as a psychiatrist I am now in a position of advantage. I don't see the patient until all the rest of the physicians have made their mistakes. But supposing in the future that patients consult a psychiatrist first, much as they do an internist now. I rather expect that some fairly obvious surgical and medical conditions will be missed. Let me give an example from an experience I recently had.

A young faculty wife was referred to me by a local woman physician with the statement that the patient had been unable to have normal sex relations with her husband for seven years. The physician furthermore stated that she had made a pelvic examination with great difficulty because of the patient's fear and vaginismus. I found the patient to be an intelligent young woman who was convinced in her own mind that her condition was psychogenic in nature. I attempted a pelvic examination but because of the patient's great resistance was not able to complete it. Instead of referring her to the department of gynecology and having her examined under anesthesia, I went on the observations of the local physician. Treatment was started. After four or five visits I came to the conclusion that I was equally unsuccessful in finding any emotional conflicts of a sexual nature at the basis of the vaginismus. I told the patient so, and then she suggested that since her uncle was a gynecologist she thought she would like to visit him in New York and have him examine her. I gladly consented. In two weeks she returned with the report that he had examined her under anesthesia and found an imperforate hymen. She also reported that she had been able to have sex relations with her husband. All I can say to soften the blow is that I believe my psychiatric treatment was less harmful to the patient than improper surgical intervention would have been. The patient supported this by saying that although the psychiatric interviews had not cured her difficulty, it had given her courage to go to her uncle and have a thorough pelvic examination. I am still not sure that she meant the statement only to ease my feelings.

The main point is this: The knowledge of the patient and her feelings are just as important in making a diagnosis as is a thorough knowledge of physiology and anatomy. One cannot do without either, yet I think it will be agreed that the medical educators in the past have sadly neglected teaching students much about the person as a human, living and emotional organism.

However, this is not entirely the fault of education; much blame lies with the physician himself. Many will not take the time or trouble to do the one fundamental act that is absolutely necessary in any kind of diagnostic procedure, that is: take an adequate history. That does not mean sitting down and asking the patient a routine set of questions but means finding out something about the man or woman. The only difference between a psychiatric history and a medical history is that the psychiatrist has to find out something about the person.

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[1] Bennett, A. E.: Faulty Management of Psychiatric Syndrome Simulating Organic Disease, J. A. M. A. **130:** 1203-1208 (April) 1946.

One must always remember that there is an organ above the neck called a brain and that it has been active since early childhood. In fact, in childhood it probably received its most vivid and important impressions, which will determine the attitude of its owner for life. Is there any reason why it is less important to learn that Mary Smith acquired a lasting hate for men because she was treated cruelly by a drunken father than to learn that she had "measles, mumps and chickenpox before the age of 10?" For gynecologists it may be a much better clue to the understanding of her frigidity in marriage than any other item in the examination. It is well to remember that sexual function is more closely related to the powerful emotion of love than to any other. And as far as I know, love still seems to have a universal appeal. When it is interfered with and the woman is unhappy, depressed, worried and frustrated, it is more than likely that its physiologic counterpart will reflect most of the disturbance.

May I suggest humbly that pain is what the patient thinks it is, and the only clue that one has to whether the patient feels pain is what she says about it. If in a careful gynecologic examination one finds signs and evidence of a process that could and most probably does give rise to pain, then certainly one's most skilful medical or surgical treatment is indicated. But I should like to suggest that if such observations are not made there is an equally likely source of pain—that caused by the associated physiologic disturbances which accompany *emotional maladjustments of long standing*.

H. B. Atlee [2] presents this problem from the point of view of the gynecologist. He is much more critical and faultfinding with his colleagues than I could consider to be my right. Never having performed a gynecologic operation, whether indicated or not, I am inclined to accept his advice that in patients with chronic right-sided pain there is no need to hurry. The patients have had their difficulty for a long time, and before surgical intervention is resorted to, as in an emergency, there is no harm in looking into some other aspects of the patient's life as possibly contributory to the complaint, if not causative. Psychiatrists see too many patients with abdominal scars and histories of eviscerations to believe that there is only the surgical approach.

May I conclude by making this plea. One should be a physician first—a surgeon, gynecologist, internist or psychiatrist last. The primary interest is in making the patient well, not in proving that one's method is the only approach. There is nothing mysterious or difficult about most psychiatric practice, but it does take an interest in persons and their troubles as well as a technical and scientific knowledge about their anatomy and physiology. I was delighted when the dysmenorrhea of a patient of mine who was found to have hypothyroidism cleared up immediately (and has remained cured for five years) as a result of thyroid medication. It was so much simpler and easier than an investigation of her personality. Everyone likes to avoid hard work and prefers to deal with direct tangible facts. That is why I shall always do a complete history, physical and laboratory investigation first before embarking on a psychologic investigation. It is easier and more easily verifiable, but to neglect the latter is not excusable, any more than embarking on highly questionable medical or operative procedures can ever be good medicine.

ABSTRACT OF DISCUSSION

Dr. William G. Barrett, San Francisco: I think Dr. Miller has stated clearly the problem which psychiatrists often face in dealing with gynecologic symptoms and the psychologic problem which gynecologists face when they come up against the symptoms of pelvic pain. I might say a few words about the term psychosomatic that so much has been heard about. At this meeting I met some friends whom I hadn't seen for quite a while, one a pediatrician and the other an internist. They both told me independently that they thought that soon *they would limit their practice to "psychosomatic medicine"!* That is a serious misconception of the meaning of the term psychosomatic. One cannot specialize in psychosomatic medicine. The term in its current usage was devised by a group of psychiatrists who had been working with the problems of chronic disease and who had been impressed anew with the fact that the mind and the body are one, not separate. Every emotion is reflected in physiologic changes, and they noted that emotions which existed chronically and which did not achieve proper expression often produced a chronic physiologic malfunctioning. The term psychosomatic describes a point of view: the study of the role of emotion in various disease processes. The problem raised by Dr. Meigs in his discussion of the previous paper, real pain versus psychic pain, has been quite well dealt with by Dr. Miller. In my opinion the problem is one of localization and the degree of disturbance of function There can be no question of "real" versus "psychic" when it comes to pain. Really to utilize this conception, this approach which is described by the term psychosomatic, one must think rather carefully to maintain the unity of mind and body. It must be remembered that change of structure is not always *the primary cause of change of function. The mind also can* alter function, and it is now known that prolonged changes of function can result in structural change. This fact reverses the earlier conception and, I feel sure, introduces an extremely important element into medicine as a whole—into the practitioner's way of thinking of disease.

Dr. Dorothy L. Morse, San Francisco: An old common sense treatment has been wrapped in new paper and has been called psychosomatic. Physicians must aspire to achieve good results whether aided by "psychology," as they were apt to say, or by psychosomatic treatment. Dr. Miller is to be commended on his sane approach to this complex problem of pelvic pain. His psychiatric point of view of pain in the pelvis is heartening, as he holds to no one-sided mode of tackling the causation of the problem or its treatment. He stresses: (1) an adequate history and examination to determine a physically abnormal process or a physiologic disturbance associated with emotional adjustments; (2) treatment of the person with a disease, not the disease in a person, and (3) that one must be a physician, a healer in the broad sense, first and a surgeon, gynecologist, internist or psychiatrist last. Dysmenorrhea, dyspareunia and pelvic pain are a worthy triad to stir the gynecologist, who should know when to supplement gynecologic therapy with psychotherapy. Probably he feels that he cannot take enough time to listen to patients talking at length, hoping to get fears and problems "off their chests." Too many pelvic operations have needlessly been performed, and many a scar has been made when the underlying cause could not be approached with a scalpel. Weiss and English state that personality traits and reactions are determined by the action of the endocrine glands and that any disturbance in the personality may upset the function of the glands, thus leading to real subjective symptoms. The emotional life has much to do with illness. In 1944 Haman studied 400 subjects in Brookline, Mass., with reference to pain thresholds. He showed that in dysmenorrheic women there is an intrinsic factor which renders them more susceptible to pain than those women free from dysmenorrhea. When the dysmenorrheic woman is assured that no organic disease exists, her fears are allayed and further treatment with suggestion, sedatives or analgesics proves beneficial. Premenstrual tension is viewed by the gynecologist as an unbalanced hormonal and electrolytic process, by the psychiatrist as an expression of emotional upset. The answer is probably an overlapping of the two ideas. Dyspareunia and frigidity may have a physical basis, but frequent unhurried discussions will establish confidence and finally unearth emotional maladjustments. Perhaps the trouble is associated with a firm hymen, fear of pregnancy, improper approach of the husband or fears due to lack of or wrong family advice. Just to unburden her thoughts to a sympathetic physician is often sufficient to lead the patient to an understanding of her illness.

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[2] Atlee, H. B.: Chronic Right-Sided Pain in Women, Canad. M. A. J. 53: 122-128 (Aug.) 1945.

Dr. Wilbur R. Miller, Iowa City: I had the great pleasure of working with the secretary of this section, Dr. Mengert, a number of years ago, and I feel that he kept me pretty much down to earth when it came to dealing with such problems. Psychiatrists are popular subjects for cartoons these days, and perhaps they are getting a little bit sensitive about it, but Dr. Morse pointed out one factor of some importance and I am glad that she stressed it. Dr. Barrett also brought out the same point. It is that psychosomatics is an unfortunate term, and it has only clothed an old idea in a new dress. The term itself clears up none of the trouble "Psychosomatic" is still a hyphenated term despite leaving out the hyphen. Most workers in academic psychiatry are trying to get closer to medicine in general, trying to get away from the former isolation of psychiatry. Medical students and interns find many aspects of psychiatry that are directly applicable to every day medicine.

FERTILITY STUDIES OF THE MALE IN BARREN MARRIAGES

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Sterility as defined by Meaker "is the inability to initiate the reproductive process." Infertility he defined as "an all inclusive term embracing any degree of conceptive capacity below the level of physiological perfection." We prefer the use of the term "lowered fertility."

The exact incidence of barren marriage is difficult to determine. Most authorities believe that between 10 and 15 per cent of adult marriages are barren. In these the male is either a contributory or sole cause in 30 to 50 per cent of the cases.

Clinically it is easy to label a marriage "barren" if defects are found which would obviously prevent conception. However, in those couples in which only a reduced fertility, and not an absolute sterility, is found, it is difficult to establish exact criteria for barrenness. In this there has been considerable disagreement, and consequently we have had to be more or less arbitrary in our selection of cases.

In our series we have accepted the opinions of Meaker,[1] Rich Hammen,[2] Wharton [3] and others, that a couple must have been trying unsuccessfully to produce a child for one year or more before the marriage can be considered barren. We have included other cases, regardless of the "involuntary sterility period," in which in our opinion defects existed which would prevent conception. These obviously would include cases of azoospermia or other serious defects of the spermatozoa or the semen; faults preventing the delivery of the semen and certain female faults, such as blocked tubes, absent ovaries and nonovulatory cycles.

The number of barren marriages in the group thus selected total 855, which we are herein reporting.

The causation of reduced fertility in the male is not known for the great majority of cases in our series. There were 519 men with impaired fertility. In 393, or 76 per cent of this group, we could not determine the cause of the subfertility.

The impairment in fertility may be due to a constitutional or local pathologic factor, or factors.

Among the constitutional diseases occurring in our series there were 9 patients who had had syphilis. In 3 of these the sperm count was below normal. One of us (L. M.[4]) found in a survey of 100 men, of whom 50 had had syphilis and 50 were normal healthy males, that there was no appreciable difference in the fertility of the two groups. We consider that unless some local lesion which involves the liver, testicle or epididymis has been demonstrated in syphilis, this disease does not affect fertility. As this was not the case in any of these patients, syphilis is not included as a cause of infertility in our series.

Tuberculosis had been present in 8 cases, but in only 1 do we believe that this disease was the cause of the low fertility. This man had had a tuberculous epididymitis.

Three patients gave a history of malnutrition. In 2 of these a bilateral gonorrheal epididymitis was the cause of the infertility, the testes being normal.

Fröhlich's syndrome accounted for 2 cases of azoospermia.

The etiologic basis was determined in 87 patients, or approximately 16.8 per cent of the 519 men with reduced fertility. Thirty-nine additional patients gave a history of only unilateral disease or injury to the testicle or vasoepididymal duct. This in conjunction with a pathologic condition of unknown origin on the opposite side resulted in defects of the spermatozoa sufficient to produce impaired fertility. It is probable that in many of the patients the inflammatory process which appeared to attack only one side was also present in the opposite organ in such a mild form that the symptoms were not observed. The cases in the two groups totaled 126, or approximately 24 per cent of the series.

Bilateral gonorrheal epididymitis was present in 26, or 20.6 per cent of the 126 cases; bilateral genital trauma in 24, or 19 per cent; bilateral orchitis due to mumps in 13, or 10.3 per cent, and bilateral abnormal genital development in 12, or 9.5 per cent. These four causes accounted for 75 cases, or 59.6 per cent of the cases in the two groups. Table 1 classifies the causes of infertility of the patients in whom there was a known etiologic condition. Table 2 classifies those cases with a unilateral known cause. It is probable that in most of the cases of infertility listed as occurring in patients with only a unilateral known etiologic basis there had been such slight involvement of the apparently unaffected apposing organs as not to have been demonstrable.

The diagnosis of lowered fertility in the male has for its basis the analysis of the semen and particularly a study of the spermatozoa. A careful physical examination and clinical history must be included for the final evaluation of the factors causing the subfertile state.

Read before the Section on Urology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

[1] Meaker, S. R.: Human Sterility, Baltimore, Williams & Wilkins Company, 1934.

[2] Hammen, R.: Studies on Impaired Fertility in Man with Special Reference to the Male, Acta obst. et gynec Scandinav. (supp. 3), **24**: 1, 1944

[3] Wharton, L. R: Gynecology, Philadelphia, W. B. Saunders Company, 1943.

[4] Michelson, L.: A Study of Syphilis in the Male Relative to Fertility, J. Urol **53**: 808 (June) 1945.

Scientific study of the semen has progressed greatly during the last decade, owing to the work of Moench, Hotchkiss, Cary, MacComber and many others. Today there are certain standards that are generally accepted as criteria, within certain broad limitations, which are indicative of normal male fertility

TABLE 1—*Reduced Fertility (Male) with Known Etiology*

Pathologic Condition *	Azoospermia, No of Cases	Other Sperm Defects, No of Cases	Total	%
Epididymitis, bilateral				
Gonorrheal	23	3	26	5.00
Tuberculous	1		1	0.19
Nonspecified cause.	1	1	2	0.39
Bilateral orchitis due to mumps	8	5	13	2.50
Trauma..	20	4	24	4.62
Developmental error	11	1	12	2.31
Frolich syndrome .	2	..	2	0.39
Unilateral gonorrheal epididymitis + unilateral trauma	2	1	3	0.59
Unilateral cryptorchism				
+ unilateral gonorrheal epididymitis	1	0	1	0.19
+ unilateral orchitis due to mumps	0	1	1	0.19
+ unilateral orchitis due to influenza	0	1	1	0.19
Malnutrition	0	1	1	0.19
Total	69	18	87	16.75

* In 87 (16.8 per cent) of 519 cases

A complete and thorough discussion of the qualifications requisite for normal fertile semen is not within the province of this paper. However, for an understanding of the data on semen in the series reported here, a few generally accepted facts may be stated.

The normal fertile man usually ejaculates from 2.5 to 6.0 cc. of semen. It is a creamy color, has a p_H of 8.0 to 8.5, a certain viscosity and a distinctive odor. Variation in these characteristics does not necessarily indicate that the person secreting it is relatively or absolutely infertile. Such deviation or deviations must be weighed in conjunction with other factors observed in the semen.

Most essential, of course, is a knowledge of the number and other characteristics of the spermatozoa in the semen. The normal fertile male's ejaculation will usually contain from 60 to 300 million spermatozoa per cubic centimeter. Of these, at least *60 to 70* per cent remain vigorously active for at least seven hours. Abnormal forms present should not exceed 20 per cent. The tapering form appears to be the one most consistently increased in number in men of lowered fertility. Moench[5] has *considered 8.5 per cent to be the* normal, any increase over this indicating impaired fertility.

TABLE 2—*Reduced Fertility (Male) with Unilateral Known Etiology*

Pathologic Condition *	Azoospermia, No of Cases	Other Sperm Defects, No of Cases	Total	%
Unilateral trauma.	3	4	7	1.35
Unilateral cryptorchism.	4	6	10	1.90
Unilateral orchitis due to mump	1	6	7	1.35
Gonorrheal vas epididymitis	9	6	15	2.80
Total	17	22	39	7.40

* In 39 (7.4 per cent) of 519 cases

A slight change in any of these essentials—number, motility or morphology—does not necessarily imply reduced fertility, but an extreme deviation in any one of them does.

Often, however, an opinion can be formed only after noting how much deviation is present in all characteristics.

Although these are the characteristics of the spermatozoa usually found in the semen of men able to impregnate their wives, it must be emphasized that no absolute rule can be formulated based on these observations.

In the few cases of pregnancies reported to us after we had studied the infertility problem of the couples, there were 11 husbands with a count of 20 million spermatozoa or less. Two of these had a count of 5 million each and 1 of 3 million. In 4 of these 11 cases the abnormal forms of spermatozoa were above the usually accepted percentage of 25 per cent for a normal fertile man. In 7 cases the percentage of motile cells present was under 50 per cent.

There were 146 cases of azoospermia; 35 patients with semen containing spermatozoa numbering ½ million or less per cubic centimeter and 3 with 1 million. *This group of 184 men can be designated as sterile.* They make up approximately 35 per cent of the husbands with impaired fertility, or approximately 21 per cent of all the husbands in this barren marriage series.

TABLE 3—*Relative Fertility of Husband and Wife in Two Hundred and Eighty-Seven Barren Marriages*

	No of Cases
Both husband and wife fertile	99
Both husband and wife sterile	1
Husband sterile; wife impaired fertility, not sterile	8
Wife sterile, husband impaired fertility, not sterile.	19
Both husband and wife contributing causes	16
Husband sole cause	103
Wife sole cause	41
	287

There were 29 cases with counts of 1 to 5 million per cubic centimeter and 13 cases with a 5 to 10 million count. In the remaining *202* cases of men with a count of below 60 million per cubic centimeter, it varied from 51 cases in the 10 to 20 million group to 34 in the 50 to 59 million group.

In the semen of 91 men there was a normal number of spermatozoa; but either the motility or the morphologic essentials, or both, were altered to such an extent as to warrant a diagnosis of lowered fertility.

As an aid in the interpretation of the characteristics of the spermatozoa *in the test tube specimen*, we have included the postcoital, or Huhner test. In 11 couples that showed greatly lowered motility for the male germ cells in the test tube specimen, a postcoital examination disproved this assumption, there being many active spermatozoa well up in the cervical canal.

In order to obtain satisfactory information, it should be stressed that this examination must be performed when the external cervical os is widely open, the mucus *clear and* profuse, showing few or no epithelial cells or pus cells microscopically. This is within about forty-eight hours of ovulation. In obtaining the specimens

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5 Moench, G L Studien zur Fertilitat, Stuttgart, Ferdinand Enke, 1931.

from the cervical canal, separate samples should be taken from three or four different levels. Although this procedure does not give a completely satisfactory estimation of the number and motility of the spermatozoa present in these portions of the canal, it does give a more representative sampling of the sperm population than that obtained at the usually accepted postcoital examination.

Information obtained from the testicular biopsy specimen is of great importance in diagnosis and prognosis. However, this information must be correlated with the clinical and laboratory observations before final judgment is passed. It should be emphasized that the section may not be truly representative, because only a small piece of tissue can be taken and the histologic picture often varies in different parts of the testicle.

The following examples emphasize the importance of the biopsy specimen in confirming or disproving the impression obtained from the physical examination.

In 31 selected biopsies the physical and microscopic examinations demonstrated normal testes in 14 cases. In 11 cases the testes were normal on physical examination, but sections showed abnormal testicular tissue. In 6 cases both examinations disclosed abnormal testes.

In the ultimate analysis, production of a child by a couple is the proof that both are fertile. However, the barrenness of a couple does not demonstrate the infertility of both, nor does it show which party is incapable of procreation or the extent of the contributing factors that may be present in husband and wife.

Of the 855 cases reported here, we were able to obtain complete data in regard to the fertility of both partners in 287 cases. A study of these couples was made to determine the relative responsibility of husband and wife for the infertile union.

In viewing these data it must be borne in mind that usually the husband had been referred to us only when the wife had been examined and was believed to be fertile, or when the reduced fertility demonstrated was not felt to be enough of a factor by itself to prevent conception. However, in 41 cases disease of the female pelvic organs was present to such an extent as alone to have accounted for the failure of conception. Obviously the data assembled from such a selected group cannot be indicative of the relative fertility of man and wife for barren marriages as a whole. This study offers a challenge to physicians, in that of these 287 couples there were 99, or approximately 34 per cent, in which both husband and wife were apparently fertile, as far as could be determined (in the present state of medical knowledge), and still no pregnancy occurred.

In 127, or approximately 44 per cent of the couples, the husband was found to be either a sole or contributing factor to the infertility.

From table 3 it can be seen that either husband or wife may be the sole cause or both may have minor defects the combination of which is sufficient to prevent conception. Consequently, one must not be satisfied with the finding of defects in one partner, but both husband and wife should be completely examined before an opinion is expressed as to the factors causing the infertility and the possibility of altering them.

It is incumbent on every physician not to initiate medical or surgical procedures on the wife until there is conclusive evidence that the husband is of high enough fertility to procreate.

SUMMARY

In a study of the fertility of the male in 855 cases of barren marriages an analysis of the semen, particularly of the characteristics of the spermatozoa, indicated impaired fertility in 519 of the husbands. The cause of the impaired fertility could only be determined in 87, or 16.8 per cent, of the cases.

In 287 of the couples adequate data was collected to analyze the relative fertility of husband and wife; both were apparently fertile in 99 of these cases, and the husband was either a contributing or sole cause of the childlessness in 127.

It is emphasized that in all infertile unions both husband and wife should be completely studied.

ABSTRACT OF DISCUSSION

Dr. Henry Sangree, Philadelphia: My associates and I have had only one success in 7 vasoepididymal operations. Dr. Edward Martin, who invented the operative procedure, showed that it was necessary to use silver wire to establish a permanent opening. In our last operation we have used a fine black silk such as is employed in arterial anastomosis. We have used the small scissors and forceps which the ocular surgeons use and have performed all the operations with the patient under a general anesthesia. We do both right and left vasoepididymal anastomosis simultaneously. As all these men have azoospermia, not only do we have a microscopist in the operating room to make a search for motile spermatozoa at the time of operative intervention, but we now also do a preliminary testicular biopsy on both testes, usually some time before the epididymovasostomy. If a man has complete atrophy of the seminiferous tubules in both testes operative intervention is not warranted. In the last 3 instances we have arranged the date of the operation on the man to correspond to the time of ovulation in the wife, and if motile sperm are found an artificial insemination is performed at the time of the operation. This we were able to do only once, without success. In the first 100 men examined, 12 cases of azoospermia and 25 of aspermia were found; 8 had severe varicocele; 7 had syphilis; 2 had hypospadias, and 1 epispadias. Chronic prostatitis, which we consider a cause of infertility, was present in 21 men. A basal metabolism test is routinely performed in all cases. Twenty-one men in the first 100 examined had hypothyroidism of varying degrees. Fluhmann of California and others have developed accurate pituitary assays, especially of the anterior pituitary gland, which often causes mild degrees of endocrine disturbances resulting in infertility. The obstetrician and gynecologist have been foremost in the study and investigation of human fertility. The urologist until recent years has paid little attention to this field, for which by training and experience he is especially fitted.

Dr. Victor D. Lespinasse, Chicago: Testicular biopsy is of no clinical value. It gives no pertinent or clinically valuable information. The Bogoloff, Scaduto, Martin operation offers slight chance of success. In 1910 an operation was devised known as Direct Vasoepididymostomy in which one specific epididymal tube is joined to the vas. Around 60 to 70 per cent of the operations have been successful. The cases that do not have sperm are of two types, the nonproductive cases in which the testicle is not producing sperm. That testicle is usually small, round and nonsensitive. The patients that do not have any sperm should be subject to exploration. If the surgeon finds an obstruction in the lower part of one epididymis, he should look at the other side and see if the patient has an obstruction in the ejaculatory duct or pelvic vas so that the two vasa can be joined and the sperms can get through in that way. If the surgeon can perform a vas operation, excellent results will follow. If not, some operation has to be performed that will relieve the obstruction and usually that is a direct vasoepididymostomy (Lespinasse). The lower down on the epididymis it can be done, the better. If a vasoepididymostomy cannot be done it may be possible to perform a sac operation (Lespinasse), a fistulization of the epididymis into the tunica vaginalis, and if the man happens to have a little hydrocele so much the better, because it is a fluid for the sperm to sail around in. At the proper time the spermatocele can be aspirated and the material placed into the uterine cavity, and so achieve a pregnancy.

Dr. Edward T. Tyler, Los Angeles: In analyzing the statistics of Dr. Michelson's excellent study, one might erroneously assume that since he is a urologist he will see a relatively higher percentage of infertile males than is the average incidence in barren matings taken at random. However, in a smaller series of approximately 70 couples, referred to the Shelton Clinic as primarily gynecologic problems, major responsibility was attributable to the male in 21, and some degree of seminal inadequacy was found in 48. These figures would also tend to emphasize the importance of the male factor. One cannot accept the study of one specimen of semen as being conclusive. It is important to evaluate at least two or even three specimens from a person before forming any definite estimate as to his fertility. On several occasions repeated analyses of the semen of husbands who had previously been told they were normally fertile revealed that the specimens were highly inconsistent, varying from poor to good, under comparable conditions. Collection of a semen specimen in a condom is unsatisfactory. It invalidates the estimate of motility and viability. A specimen for examination should be ejaculated directly into a clean, dry, glass receptacle. I prefer to obtain specimens of semen for analysis at a time corresponding to the relatively infertile period of the wife's cycle. In this way there is less possibility of wasting a good specimen when it might be useful. Many infertile males lack the capacity for quick regeneration of spermatozoa, and therefore it is advisable to avoid analyses of semen near the wife's estimated time of ovulation.

Dr. Lewis Michelson, San Francisco: Dr. Sangree spoke of prostatitis as a cause of impaired fertility. Although it is known that the prostatic secretion is essential to the viability of the spermatozoa, I have never been able to observe any change in the characteristics of the sperm following treatment of the diseased gland. It is extremely probable that there are some intrinsic qualities of the germ cell that cannot be demonstrated microscopically. The fact that occasionally pregnancy occurs following treatment may point to such a conclusion. The length of involuntary sterility of the couples in this series varied from one to thirteen years. A large percentage of couples waited five years or over before consulting a physician. In many cases the wife had been treated for some time before the physician advised examination of the husband, and in some of these the husband had no spermatozoa. I want to emphasize again that in every case of infertility both husband and wife should be examined. I must disagree with Dr. Lespinasse that the normalcy of a testicle can be determined by physical examination alone. I have often seen a testicle that appeared normal on physical examination, but the biopsy specimen was abnormal. However, these small pieces are not always truly representative of all portions of the testicle. I agree with Dr. Tyler that more than one specimen of semen should be examined. This applies also to those cases in which the first specimen appears to be normal. I often examine three to four specimens before I am satisfied. I also am in accord with his opinion that a condom specimen is not trustworthy. It is the powder, not the rubber, that damages the motility of the spermatozoa. Some patients are not able to obtain a specimen except by use of a condom. In those cases the condom, before being used, should be washed thoroughly with a mild soap and water, rinsed with distilled water and dried. I have seen one case of necrospermia in over 1,100 cases of barren marriage. On postcoital examination many spermatozoa were found (at least 100 per high power dark field) well up in the cervical canal. This observation is both instructive and important, as it shows that the vibratile motion of the spermatozoa is not essential to their transport into the uterine cavity.

SURGERY OF THE LARYNX IN BILATERAL ABDUCTOR PARALYSIS

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In my opinion, more thought and interest has been shown in the surgical treatment of bilateral paralysis of the abductor muscles of the larynx since 1939 than in any other equivalent period in the history of medicine.

The reason for this interest, I believe, is the number of successes resulting from the extralaryngeal approach to this problem. The old adage that "Nothing succeeds like success" may well be applied in this instance. When the old intralaryngeal methods were being used with their attendant failures, not many were interested in trying to cure bilateral abductor paralysis by surgical methods. But when Dr. Brien King [1] of Seattle, Wash., came forward with his idea of the extralaryngeal approach to this problem, many surgeons began to do some thinking on this phase of laryngeal surgery.

The great obstacle in the intralaryngeal route was the formation of scar tissue. For 1 success, there were 10 failures. As Dr. Fletcher Woodward [2] expressed it in one of his papers on the subject, "This is not a successful operative procedure." The extralaryngeal route offered an escape from the failures of the past, and surgeons welcomed this possibility with open arms.

So to Dr. Brien King goes the credit for having awakened the laryngologists to the possibilties of the extralaryngeal approach to the arytenoid cartilage. Since his papers in 1939,[1] with his report of an unusual number of successes by this method, no less than four new methods have been devised for the external approach to the arytenoid cartilage. This cartilage in the opinion of most surgeons is still the keystone in the success or failure of any operative procedure for the surgical relief of bilateral abductor paralysis of the larynx.

Hence, it seems proper and timely, after a period of seven years, to again review the literature on this subject and attempt to standardize the different surgical procedures advocated, so that laryngologists contemplating this work will have some facts to guide them in determining which type of surgical relief is best suited to their particular requirements.

This review is my own and I state the facts as I see them, as a laryngeal surgeon; it is not to be misconstrued as a criticism of any person or surgical technic. Few surgical technics are perfect. There is nearly always something to be desired.

THE KING OPERATION

With that idea in view, I shall consider first Dr. King's operation and see if it can be determined by examination of his original technic what led to the development of the arytenoidectomy procedure.

I believe some operators became discouraged with Dr. King's technic as originally described for several reasons: First, they found it difficult or almost impossible to distinguish or separate the anterior belly of the omohyoid muscle in those thyroidectomized patients

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Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946.

[1] King, B. T.: A New and Function Restoring Operation for Bilateral Abductor Cord Paralysis: Preliminary Report, J. A. M. A. **112:** 814-823 (March 4) 1939; Tr. Am. Laryng. A. **61:** 264-296, 1939.

[2] Woodward, F.

who had undergone more than one operation, or whose pretracheal muscles had been cut in a single operation or in whom roentgen treatment followed thyroidectomy. The attempts of some surgeons to dissect the upper part of the anterior belly of this muscle resulted in difficult bleeding, which interfered with the remainder of the operation. Also, to the uninitiated surgeon, it was often a shock to cut into a neck on which several previous operations had been performed and to be confronted with a mass of fibrous and scar tissue in which he was unable to distinguish any muscular structures. Moreover, when it came to cutting, dissecting and elevating the inferior constrictor muscle and to exposing and separating the pharyngeal mucosa from the posterior surface of the cricoid cartilage and the alar of the thyroid cartilage, the presence of a large amount of fibrous and scar tissue caused some of them to perforate into the pharynx and left them pretty much disoriented.[3] Also, much stress was laid on the severance of the interarytenoid muscles in order to properly mobilize the arytenoid and allow its displacement without distorting the larynx and pulling the intralaryngeal structures to the side on which the operation had been performed. Some operators said in the reports sent to me that they failed to do this or, in cases in which it was done, it was not done completely enough to prevent the healing of the muscles and the pulling of the arytenoid back to the median line.

It was to overcome these difficulties which had been outlined to me by surgeons who had tried the King technic after reading Dr. King's paper of March 1939, that I devised the window operation for the complete extralaryngeal removal of the arytenoid cartilage. I first performed this operation on Nov. 3, 1939 and have continued to use it with some modification since that time.

ARYTENOIDECTOMY

My thought was, as originally stated, to get some more space in the larynx by removing the arytenoid by the simplest method I could devise and to let nature relieve the patient's distress by the formation of scar tissue. I later found that it was necessary, in order to insure uniformly good results, to place a suture through the cord and to fix it away from the median line of the larynx. This modification was also made by Dr. Edward Wright of Atlanta, Ga.[4]

It was not long after the publication of my technic[5] until surgeons began to complain about the arytenoidectomy operation. They were having difficulty working through a "keg hole," as one surgeon expressed it. Also they complained that since the larynx varied in size and shape the size and location of the window would have to be varied accordingly. They claimed that for this reason the technic was not constant, hence misleading; that it wasn't necessary to go through the tedious dissecting out of the arytenoid cartilage through a window and that just mobilizing and dislocating the arytenoid into the window was sufficient to give a good result. One surgeon cited three good reasons why the arytenoidectomy technic was no good and then in the next paragraph acknowledged that he had never attempted the operation on the living.

It was a desire to simplify the locating of the position at which to make the window in the thyroid cartilage that stimulated Drs. Julius W. McCall and Frederick S. Gardiner[6] of Cleveland to devise a method of transilluminating the larynx by use of a brightly lighted anterior commissure laryngoscope. After the arytenoid is located by the shadow it casts on the thyroid alar, the window is made. After the window is made by use of the laryngoscope, the arytenoid is fixed with a needle or skin clip intralaryngeally and the end of the suture is passed through the intralaryngeal mucosal membrane and out the window. This maneuver assists in delivering the arytenoid into the window after it is mobilized. The arytenoid is not removed but sewed into position in the window. Personally, I see no need for the transillumination and second, if you have the arytenoid delivered at the window, why not remove it? This procedure, I believe, was advocated by some laryngologists from Chicago who considered that it was better than placing a suture. These are personal modifications and in my opinion have no bearing on the general principles of the surgery involved.

In November 1943 Dr. Henry Orton[7] came forward with another technic to simplify the arytenoidectomy and advocated the removal of the posterior third of the thyroid alar in order to make a wider field in which to remove the arytenoid. His technic makes no effort to fix the cord away from the median line. It is true that this procedure does help to simplify the removal of the arytenoid cartilage; but my argument with him then and now is that one must preserve the continuity of the thyroid cartilage for consistently good results, because the soft tissues of the neck will fall into the larynx or be drawn to the median line after the surgical operation, particularly when the muscular tissue of the larynx is paralyzed.[8] I have tried it and I have seen it happen. Furthermore, the cord must be anchored to some fixed point in order to insure a good result.

Lately, Dr. DeGraaf Woodman[9] of New York, working on Dr. John Kernan's service at Presbyterian Medical Center, has come forward with a new technic, which is a combination of Dr. King's approach and the complete removal of the arytenoid with a fixation of the cord by putting a suture through the alar cartilage. He has gone so far as to advocate the severance of the lower thyrocricoid articulation, a procedure which in my opinion is unnecessary. It creates just that much more trauma and secondary edema to a paralyzed larynx and increases the necessity for a feeding tube.

He has also advocated elevation of the perichondrium on the mesial surface of the alae of the thyroid cartilage rather than just the elevation of the pharyngeal mucosa. This is undoubtedly an added precaution against rupture of this mucosa. I have tried the operative procedure, and in my opinion there was considerable traumatic edema and difficulty in swallowing, which required the patient to use a feeding tube for three or four days. I could not see that it was any improvement over Dr. King's approach or the arytenoidectomy technic. In older patients in whom the cartilage has undergone definite ossification, care should be exercised to traumatize the laryngeal box as little as possible.

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[3] Morrison, L. F.: Further Observations on the King Operation for Bilateral Abductor Paralysis, Ann. Otol., Rhin. & Laryng. **54:** 390 (June) 1945.

[4] Wright, E. S.: The Kelly Operation for Restoration of Laryngeal Function Following Bilateral Paralysis of the Vocal Cords: Report of Three Cases, Ann. Otol., Rhin. & Laryng. **52:** 346 (June) 1943.

[5] Kelly, J. D.: A Supplementary Report on Extralaryngeal Arytenoidectomy as a Relief for Bilateral Abductor Muscular Paralysis of the Larynx, Ann. Otol., Rhin. & Laryng. **52:** 628 (Sept.) 1943; Some Problems in the Surgical Treatment of Bilateral Abductor Paralysis of the Larynx, ibid. **53:** 461 (Sept.) 1944

[6] McCall, J. W., and Gardiner, F. S.: A Simplified Operation for Bilateral Abductor Paralysis, Laryngoscope **53:** 307-311 (May) 1943.

[7] Orton, H. B.: Surgical Approach for Arytenoidectomy in Bilateral Abductor Paralysis of the Larynx, Laryngoscope **53:** 709 716 (Nov.) 1943.

[8] Kelly, J. D.: Surgical Treatment of Bilateral Paralysis of the Abductor Muscles of the Larynx, 1943 Graduate Lecture, American Academy of Ophthalmology and Otolaryngology, Continuous Course no. 55.

[9] Woodman, DeG.: A Modification of the Extralaryngeal Approach to Arytenoidectomy for Bilateral Abductor Paralysis, Arch. Otolaryng. **43:** 63 (Jan.) 1946.

From the foregoing analysis one can sum up the situation in regard to bilateral abduction muscular paralysis by saying that there are two definite surgical procedures which have been tried and not found wanting according to the statistics of successful results up to the present time. There is the posterior approach of Dr. King with the attendant mobilization and fixation of the arytenoid cartilage to the alae of the thyroid cartilage. And the second procedure may be described as the arytenoidectomy in which a direct approach is made to the arytenoid cartilage through a window made in the thyroid cartilage with an effort to minimize as much as possible any trauma to the surrounding tissues and to procure more space in the larynx by taking out the arytenoid cartilage. When operating in a small, narrow larynx, it is an easy matter by this method to remove some of the muscle tissue of the cricoarytaenoideus or thyroarytaenoideus muscles, if more separation of the cords is desired. Both these surgical procedures it is known from past experience have given a good percentage of successful results; hence it is for the surgeon to decide which technic he prefers.

ABSTRACT OF DISCUSSION

Dr. Simon Jesberg, Los Angeles: This matter of bilateral abductor paralysis of the larynx appears to be something like a deviated septum of the nose. There is obstruction to the respiratory tract, and one is trying to find some way to get a passage through. This distressing condition probably does not bother the patient as much as it does other people when the patient makes this terrible noise at night. Whether the arytenoid muscle is displaced or removed does not make a great deal of difference. One might as well come back and say that in a nose there is an obstruction with a deviated cartilage. Shall it be removed or displaced? Personally, I would remove the cartilage. Brien King, in his original work, thought that the omohyoid would cause motility of the arytenoid. This, however, is not true. His implantation did not bring about movements of the vocal cords during respiration. One has either to remove or displace the arytenoid. Room has to be made in there, just as it does in the nose if one is going to get rid of obstructive cartilage.

Dr. Lewis F. Morrison, San Francisco: I am sorry that Dr. Kelly ran out of time. I should like to have had him go on a little further. He had one or two things that I might like to take him on with, maybe for one or two rounds. It would be interesting, I think, mostly to us, not to a great many of the rest. There is one point I should like to mention which was brought to my attention by Dr. Brien King when he first came to the university to tell what to do with this condition. He had had some extremely unpleasant news from the eastern section that the procedure had been tried by several good laryngologists and that the results were almost universally poor. In fact, they were failures. He told me, "If you learn your anatomy, don't expect to find it there when you go for it, because this is not virgin territory that you are going to get into, but it is very nice to know what ought to be there." So I spent a great deal of time on fresh cadaver material and then started out with the King procedure, mostly as it was outlined. I am grateful to Dr. King for encouraging me to learn my anatomy from the outside. As a result of that, in getting into these second, third and fourth operative fields, one does not feel quite as unhappy about the scar tissue. If one takes a little time, the bleeding can be controlled adequately. Once one has gotten to the inferior constrictor muscle, from then on the going is usually undeterred by scarring, possibly with one exception. I entered into virgin territory in a person who had a diffuse, disseminated arthritis and whose joints were arthritic; I had a difficult time finding the cricoarytenoid joint.

Dr. Brien T. King, Seattle: Dr. Kelly has mentioned the difficulties and bleeding encountered while performing the operation for bilateral cord paralysis by the technic described by me. Only two vessels of any importance are encountered. The first is the superior thyroid artery. I have found it necessary to ligate that artery in only about 20 of 79 operations for bilateral cord paralysis, and there is little difficulty in its ligation. The vessel that almost invariably gives me trouble, but only of the nuisance sort, is a branch of the superior laryngeal artery, which runs down the very bottom of the pyriform fossa and anastomoses on the posterior surface of the cricoid cartilage with the corresponding vessel on the opposite side. I have found it extremely difficult to ligate that vessel, but bleeding is easily controlled with electrocoagulation. I no longer consider the omohyoid muscle of importance in the operation. I still attach it to the arytenoid cartilage. Dr. Morrison does not, and his results are as good as mine. It is my opinion that the retention of the arytenoid cartilage is an important consideration in the operation. I think Dr. Kelly goes about his operation in the hard way. He is performing an important operation through a window in the thyroid cartilage which is ⅜ inch (1 cm.) in diameter. Dr. Woodman of New York has recently described a modification of Dr. Kelly's technic which to me is simpler and offers 1½ inches (4 cm.) exposure of the posterior surface of the larynx in which one can easily visualize the subsequent steps of the operation. It is the same approach which I use, except that I prefer to outwardly rotate and displace the arytenoid cartilage rather than to excise it. The fibers of the inferior constrictor of the pharynx along the lateral border of the thyroid cartilage are divided. It is then necessary to carefully remove or dissect the pharyngeal mucosal attachments from the posterior border of the thyroid cartilage. When that is accomplished the mucosa can easily be pushed out of the pyriform fossa and off the posterior surface of the cricoid cartilage. This will give the operator a good view of the region in which the important technical details of the surgical procedure are to be carried out. Experience has taught me that a separation of the posterior ends of the vocal cords of from 4 to 5 mm. gives the best results. More than 6 mm. will give only a whisper for a voice. Three millimeters or less, will produce an inadequate airway.

Dr. Lorenz Ruddy, Sacramento, Calif.: We are indeed fortunate in having at this meeting the three main contributors to this subject, Drs. King, Kelly and Morrison. It is with a humble attitude that the following comments are offered from a more limited experience: 1. The cosmetic benefits of horizontal incisions should be stressed. 2. The window approach is personally preferred because it is more direct. It exposes the vocal process of the arytenoid at one end of the operative field and its muscular process at the other. 3. To overcome some of the difficulties, the following technic was devised and used with success: a. The window is made at least ½ inch (1.3 cm.) square, leaving a posterior and inferior cartilage rim ⅛ inch (0.3 cm.) wide. b. After locating the arytenoid by probe and dissecting the muscle from its lateral face, the displaced muscle oved by scissors. The remaining steps can then be taken pered by redundant tissue. c. The King operation has strated that arytenoidectomy is not necessary for a sful result. The interarytenoid muscles, however, must be from their action on the arytenoid. This can be accom- d by severing the cricoarytenoid joint capsule, displacing ytenoid and dissecting away its interarytenoid muscle and a on its posterior surface as far as its medial border. reed superfluous muscular process is then removed. The and vertical processes of the arytenoid, however, are left ce. Dissecting them free of the mucosa on their medial e is tricky, liable to perforation and undesirable. It is vantage to leave the mucosa attached, for in pulling the ning portion of the arytenoid cartilage laterally for fixa- this mucosa is brought with it. d. Finally, a fine chromic e is passed through the tendinous portion of the posterior f the cord, the importance of which has been stressed by s. Another is passed around the center of the vertical ss of the arytenoid. The two sutures when retracted lly can provide the space desired, as determined by goscopic examination. It is important to fix these sutures at their lateral pull is along the same horizontal plane in the vocal cord is normally situated; if this is not done, oice may be unnecessarily altered. The frame of the thyroid ow provides fixation for the sutures in the position that is ed.

. JOSEPH D. KELLY, New York: I am sorry I could not this paper, whose whole object was to develop the reasons and the difficulties experienced with, not only the King tion but arytenoidectomy and all the other procedures that o the development of the things that followed. The object not to criticize the technic of the King operation as it is cted today but rather to give a historical development of easons why the surgical technic in the beginning was faulty these other technics were devised as improvements. I ed to present them in such a way that their successes and es might be known and the surgeon could decide what of technic he could use best. The only argument that King and I have ever had about the treatment of this tion has been whether or not the best results are obtained aving the arytenoid cartilage in or taking it out. At present eve both of us have handled a sufficient number of cases to ardize the operative procedures we have advocated, and depends on the surgeon's particular manual dexterity ner or not he prefers the arytenoidectomy operation or, as King says, the posterior approach.

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ne of the Greatest Miracles of Modern Medicine.—ly I would like to speak of the miracle which has occurred iminating tetanus from military surgery. Let me recall figures: In our Civil War the mortality rate was from 95 per cent. Shortly before World War I under the it of antitoxin, which was discovered and elaborated on by se of animals, the mortality rate had dropped to between nd 80 per cent. During World War I large statistical nce showed a mortality rate of 20 to 58 per cent, but in the nd World War only 11 cases are known to have occurred g 10,700,000 men. Of these 11 cases, 5 had been given d and 6 had not. Moreover, in the 11 cases there are ds of only 4 deaths, 2 of which occurred in individuals who received the basic series of toxoid but no booster dose, and individuals who had not received even the basic series. is, in my mind, one of the greatest miracles of modern cine. The basis of the establishment of a proper toxoid squarely on animal investigation, and no greater debt could knowledged to our friends in the animal kingdom than this nce for the good of humanity.—Cutler, Elliott C.: Experi- of an Army Doctor in the European Theater of War, *J. Surg.*, June 1947.

NEBULIZATION THERAPY IN BRONCHIECTASIS

The Use of Penicillin and Streptomycin Aerosols

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Aerosols have been employed at the Mayo Clinic in the treatment of secondary infection associated with bronchiectasis since August 1944. A preliminary report of experience with penicillin aerosol therapy was made in June 1945.[1] Particular reference was made to the use of the method in the preparation of patients with bronchiectasis for pulmonary resection. In February 1946 the use of nebulized streptomycin was reported briefly.[2]

At the present writing, nebulization therapy has been used at the clinic for 86 patients with chronic bronchiectasis. Forty-six of these patients were treated in preparation for surgical resection of portions of the lung. The remaining 40 patients had bilateral bronchiectasis or were not suitable candidates for surgical intervention. In these 40 cases aerosol therapy was instituted in the hope of reducing the volume of pulmonary secretions. In all 86 cases aerosol penicillin was used. However, in 27 cases streptomycin hydrochloride [3] was added to the penicillin solution for nebulization.

SUMMARY OF THE LITERATURE

Contributions to the study of aerosol therapy have been reviewed thoroughly by Segal [4] in a recent article. Many substances have been used for inhalation therapy including solutions of sulfonamide compounds.[5] Bryson, Sansome and Laskin [6] were the first to demonstrate a method for nebulization of penicillin solutions, and they showed that penicillin was absorbed from the lungs and excreted in the urine. Much of the fundamental investigation in the field of inhalation therapy has been done by Barach. Barach and his associates [7] published their preliminary observations on treatment with penicillin aerosol in April 1945. Significant contributions in methods of administering penicillin aerosol have been made by Mutch and Rewell,[8] Knott and Clark [9] and Hagens and his associates.[10] Segal and Ryder [11] have reported the application of penicillin by inhalation to the treatment of acute and serious forms

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From the Division of Medicine, Mayo Clinic.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946.

[1] Olsen, A. M., and Clagett, O. T.: Nebulized Penicillin: Preliminary Report of Its Role in the Management of Surgical Bronchiectasis, Proc. Staff Meet., Mayo Clin. **20:** 184-193 (June 13) 1945.

[2] Olsen, A. M.: Streptomycin Aerosol in the Treatment of Chronic Brochiectasis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **21:** 53-54 (Feb. 6) 1946.

[3] The streptomycin hydrochloride was supplied by Dr. D. F. Robertson of Merck & Co., Inc. and was administered with the cooperation of Dr. H. C. Hinshaw.

[4] Segal, M. S.: Progress in Inhalation Therapy, Mod. Med. **14:** 63-79 (April) 1946.

[5] Castex, M. R.; Capdehourat, E. L., and Lavarello, A.: Nuevo tratamiento de las supuraciones broncopulmonares; acción curativa de un preparado sulfamídico nebulizado, Rev. Asoc. méd. argent. **55:** 85-89 (Feb. 15-28) 1941.

[6] Bryson, V.; Sansome, E., and Laskin, S.: Aerosolization of Penicillin Solutions, Science **100:** 33-35 (July 14) 1944.

[7] Barach, A. L.; Silberstein, F. H.; Oppenheimer, E. T.; Hunter, T., and Soroka, M.: Inhalation of Penicillin Aerosol in Patients with Bronchial Asthma, Chronic Bronchitis, Bronchiectasis and Lung Abscess: Preliminary Report, Ann. Int. Med. **22:** 485-509 (April) 1945.

[8] Mutch, N., and Rewell, R. E.: Penicillin by Inhalation, Lancet **1:** 650-652 (May 26) 1945.

[9] Knott, F. A., and Clark, W. H.: Absorption of Aerosol Penicillin via the Lungs, Lancet **1:** 468-469 (April 14) 1945.

[10] Hagens, E. W.; Karp, M., and Farmer, C. J.: Inhalation Method for Penicillin Therapy: Preliminary Report, Arch. Otolaryng. **41:** 333-336 (May) 1945.

[11] Segal, M. S., and Ryder, C. M.: Penicillin Aerosolization in the Treatment of Serious Respiratory Infection: A Preliminary Report, New England J. Med. **233:** 748-756 (Dec. 20) 1945.

of respiratory disease Bobrowitz and his associates[12] used both inhalation and tracheal instillation in treating the infection associated with bronchiectasis in 12 cases Barach and his associates[13] applied the method to the treatment of disease of the accessory nasal sinuses. Nebulized penicillin has been used in a variety of conditions by Vermilye[14] and also by Hanks[15] The results obtained by Vermilye and by Hanks in the treatment of bronchial asthma have not been secured by other investigators.[11] Aerosol treatment for a variety of constitutional symptoms presumably related to the bacterial flora of the upper part of the respiratory tract does not seem to be justified at present.

METHOD OF ADMINISTRATION

The method of administration employed was as follows: A glass nebulizer[16] was connected by means of rubber tubing to an oxygen tank equipped with a reducing valve and flow meter (fig 1). The solution was placed in the nebulizer, and the passage of 4 to 6 liters of oxygen through the nebulizer produced a fine mist. The patient held the open end of the nebulizer in his mouth. A Y tube was inserted into the tubing between the reducing valve and the nebulizer. During inspiration the patient closed the Y tube. The Y tube remained open during expiration, and oxygen escaped. Thus, oxygen passed through the nebulizer only during the inspiratory phase of respiration, and loss of the drug was reduced to the minimum. If the breath was held for a few seconds after each inhalation, a greater amount of the therapeutic agent was retained in the bronchial tree. The pressure necessary to nebulize solutions in the nebulizer can be supplied by a small motor and air compressor as well as by the oxygen tank. In consideration of the results obtained in this series the possible therapeutic benefit of oxygen therapy should not be discounted entirely; however, for practical purposes any source of air pressure should be adequate. Air pressure has proved to be satisfactory for treatment by nebulization in the home.

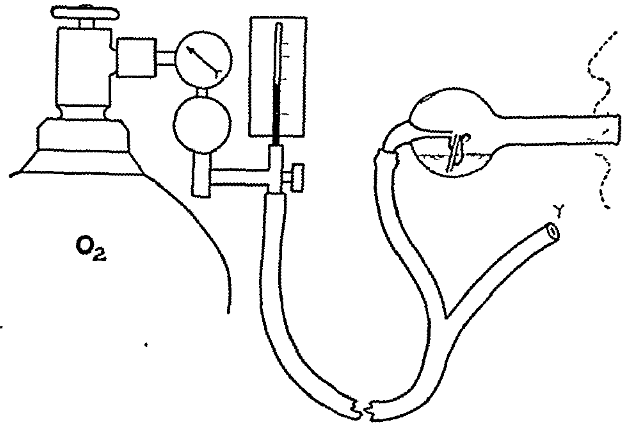

Fig 1 —Apparatus used for nebulization therapy Oxygen used as source of positive pressure, 4 to 6 liters per minute required Y tube is closed during inhalation, opened during exhalation "Vaponefrin" type of nebulizer is illustrated

Modifications of the standard glass nebulizer have been devised to prevent loss of too much of the drug during expiration.[7] A special nebulizer with a large bulb may be used, or a collapsible rubber rebreathing bag may be attached to a standard nebulizer. Such modifications have been helpful for children and older persons who have found it difficult to close the Y tube during inspiration and to open it during expiration. An automatic demand type of oxygen regulator also has been devised to deliver oxygen pressure only during inspiration.[17] The patients treated at the clinic whose general health has been good usually have preferred the standard nebulizer because it is easy to handle. For special cases an oronasal mask has been attached to the nebulizer.

At the clinic, the sodium salt of penicillin dissolved in isotonic solution of sodium chloride has been used most frequently for nebulization. A standard solution of 10,000 units per cubic centimeter has been employed routinely for hospital practice. Streptomycin hydrochloride likewise was dissolved in saline solution and was used in concentrations of 25 to 50 mg (25,000 to 50,000 streptomycin units) per cubic centimeter. Solutions of penicillin or streptomycin can be nebulized at the approximate rate of 1 cc. every ten minutes Periods of rest were advisable, and most patients planned to nebulize 3 cc. each hour. During the course of a day patients nebulized from 20 to 30 cc. without difficulty, and the period of daily treatment usually lasted ten hours. The rather prolonged period of treatment has been used because it has been demonstrated that the bactericidal effect of penicillin requires a constant exposure of the bacteria to the drug for four to six hours[18]

Penicillin sodium and streptomycin hydrochloride were combined in solution for aerosol therapy. Two hundred thousand units of penicillin and 0 5 Gm. (500,000 streptomycin units) or 1 Gm. (1,000,000 streptomycin units) of streptomycin were mixed in 20 to 30 cc. of isotonic sodium chloride solution. In vitro studies conducted by F. R. Heilman[19] have demonstrated that combining these drugs does not impair the antibacterial activity of penicillin. Streptomycin is quite stable in this solution. In nearly all instances in which nebulized streptomycin has been used at the clinic, it has been combined with penicillin sodium.

All the patients who had bronchiectasis were hospitalized for aerosol therapy. Postural drainage was instituted in each case, and a careful record was kept of the daily volume of the sputum as well as its character, consistency and odor. Bronchoscopic examination was carried out in all cases, and complete bronchographic studies were made. Secretions were aspirated at the time of bronchoscopic examination for bacteriologic study. During treatment specimens of sputum were obtained at frequent intervals for bacteriologic study.

RESULTS OF TREATMENT

Surgical Cases.—Nebulization of an antibiotic agent was employed as a preoperative measure in 46 cases. Surgical procedures carried out in these cases by Harrington, Clagett and Gray included resection of the lower lobe of the left lung in 19 cases; of the lower lobe and

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[12] Bobrowitz, I D, Edlin, J S, Bassin, S, and Woolley, J S Penicillin in the Treatment of Bronchiectasis A Preliminary Report, New England J Med **234**: 141 147 (Jan 31) 1946

[13] Barach, A L, Garthwaite, B, Soroka, M, and Anderson, F F. An Apparatus for the Introduction of Penicillin Aerosol into the Nasal Accessory Sinuses with a Case Report of a Patient with Chronic Sinusitis, Ann Int Med **24**: 97 103 (Jan) 1946

[14] Vermilye, H N., Aerosol Penicillin, J A M A **129**: 250 257 (Sept 22) 1945

[15] Hanks, R J., Nebulized Penicillin in the Treatment of Respiratory Infections, Texas State J Med **41**: 253 (Sept) 1945

[16] The "vaponefrin" and DeVilbiss no 40 nebulizers were used Special nebulizers and the rebreathing apparatus were supplied by the Vaponefrin Company.

[17] Eckman, M, Rumsey, C C, Jr, Barach, B, and Barach, A L A Demand Apparatus for Automatic Delivery of Aerosols During Inspiration, J. Lab & Clin Med **30**: 608 610 (July) 1945

[18] Herrell, W E Penicillin and Other Antibiotic Agents, Philadelphia, W B Saunders Company, 1945, p 35

[19] Heilman, F R. Personal communication to the author

lingula of the upper lobe of the left lung in 11; of the lower lobe of the right lung in 6; of the lower and middle lobe of the right lung in 3; pneumonectomy in 6 and segmental resection of the superior portion of the lower lobe of the right lung in 1 case. In 7 of the cases in which a single lobe was removed, some degree of bronchiectasis had been demonstrated in other lobes. Bronchoscopic aspiration was performed in all cases after pulmonary resection while the patient was still on the operating table.

Penicillin aerosol therapy was administered to all these patients for periods varying from four days to four weeks before operation. Some of these patients received penicillin by the intramuscular route for from twenty-four to forty-eight hours prior to operation, and all 46 received penicillin by the intramuscular route for varying periods after operation. In 7 instances in which pulmonary secretions revealed gram-negative bacteria, streptomycin and penicillin were mixed for aerosol therapy before operation.

In the majority of the surgical cases the volume of pulmonary secretions was reduced considerably in the preoperative period. The routine postoperative bronchoscopic examination often revealed that the bronchial tree was practically free of secretions. When preoperative nebulization therapy had been effective, additional bronchoscopic aspirations for the relief of pulmonary atelectasis have been required only infrequently. In 10 of the 46 cases, postoperative atelectasis occurred and bronchoscopic aspirations were performed. Nine of these 10 patients had not responded well to treatment with nebulized penicillin, and 4 of the 10 were children. Empyema which required external drainage developed after operation in 4 cases. Three of these patients had not experienced a satisfactory reduction in the quantity of sputum prior to operation. In general, an unsatisfactory response to treatment with penicillin aerosol could be correlated with the presence of gram-negative bacteria in the sputum. Only 1 patient treated with penicillin and streptomycin aerosols had any difficulty after operation. No postoperative fatalities occurred in this series.

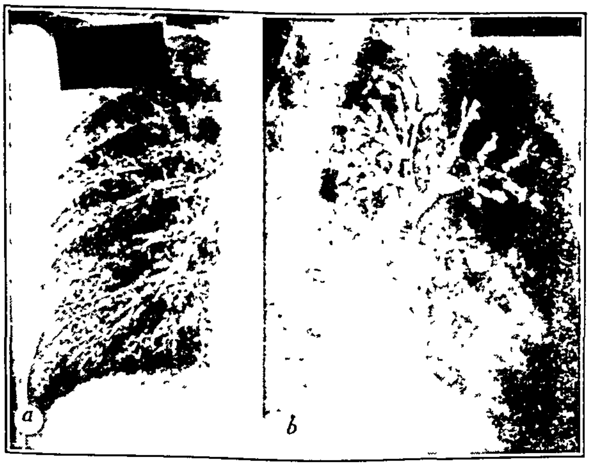

Fig. 2.—Bronchogram of woman aged 22 showing *a*, normal right lung; *b*, extensive bronchiectasis of the left lung Penicillin aerosol was given for seven days before operation. The volume of sputum was reduced from 150 to 30 cc per day. A pneumonectomy was performed, and no complications developed.

It is recognized that penicillin administered parenterally is valuable in the preparation of patients for thoracic surgery. White and his associates[20] have shown that penicillin given intramuscularly is effective in the prevention of postoperative empyema and other complications. The parenteral administration of penicillin to patients after operative intervention has undoubtedly contributed to the favorable postoperative course. However, it is my impression that nebulization therapy has been particularly efficacious in reducing the volume of pulmonary secretions prior to operation. Nebulization therapy was especially helpful in the 7 cases in which lobectomy was performed in the presence of bronchiectasis elsewhere in the bronchial tree. Adequate nebulization therapy may extend the indications for pulmonary resection in bronchiectasis (figs. 2 and 3).

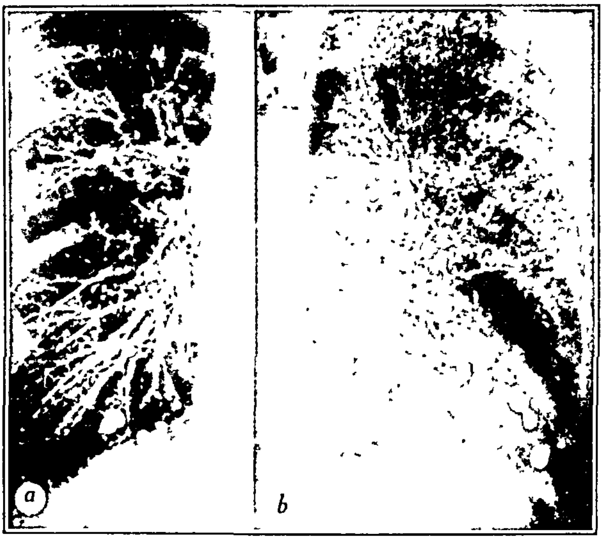

Fig. 3.—Bronchogram of woman aged 21 showing: *a*, saccular bronchiectasis of the lower lobe of the right lung; *b*, extensive saccular bronchiectasis of the lower lobe of the left lung. Penicillin aerosol was administered for twenty six days before operation. The volume of sputum was reduced from 240 to 45 cc. per day. Excision of the lower lobe of the left lung was performed without complications. The patient has continued aerosol therapy.

Nonsurgical Cases.—Forty patients who had bilateral bronchiectasis have been treated by the method of nebulization. Conventional methods of therapy, such as postural drainage, climatic change and bronchoscopic aspirations, had been tried by many of these patients without much benefit. Several of the group had been treated previously with sulfonamide compounds and parenterally administered penicillin with little or no improvement. The age of these patients ranged from 8 to 70 years.

All 40 patients were treated in the hospital for periods of two to eight weeks. The average duration of the stay in the hospital was four weeks. The long period of treatment allowed an opportunity for complete study. Although adequate investigation of the levels of penicillin in the blood and determinations of urinary excretion of penicillin had been made by other workers[21] using similar methods of administration, determinations were carried out for some of these patients to make certain that penicillin was being absorbed and excreted. In general, patients excreted from 10 to 20 per cent of the inhaled penicillin in twenty-four hours. Streptomycin could be demonstrated in the urine in small quantities after inhalation of this drug.

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[20] White, W. L.; Burnett, W. E.; Bailey, C. P; Rosemond, G. P.; Norris, C. W.; Favorite, G. O.; Spaulding, E H., Bondi, A. Jr., and Fowler, R. H.: Use of Penicillin in Prevention of Postoperative Empyema Following Lung Resection, J. A M. A. **126**: 1016 1024 (Dec. 16) 1944.

[21] Bryson, Sansome and Laskin.[6] Barach, Silberstein, Oppenheimer, Hunter and Soroka.[7] Segal and Ryder.[11]

All 40 patients were treated with nebulized penicillin first, and 20 of the 40 patients were treated with aerosol penicillin only. In recent months, however, a limited quantity of streptomycin hydrochloride has been available for aerosol therapy of those patients whose pulmonary secretions contained gram-negative bacilli. The other 20 patients, therefore, were treated with a combination of penicillin and streptomycin aerosols.

Results of nebulization therapy were considered satisfactory if the daily volume of purulent secretions was reduced 75 per cent or more. In 19 of the 40 cases penicillin aerosol did not reduce the daily volume of sputum to a fourth of its previous volume. In 21 instances satisfactory reduction in volume of sputum was obtained.

TABLE 1.—*Streptomycin and Penicillin Aerosol in Twenty Cases*

Case	Age, Yrs.	Sex	Location of Bronchiectasis; Lobes Involved	Predominant Micro-Organisms Present	Daily Volume of Sputum on Admission, Cc.	Penicillin Aerosol, Days Treated	Volume of Sputum After Penicillin Treatment, Cc.	Strepto-mycin and Penicillin, Days Treated	Final Volume of Sputum, Cc.
1	28	♂	RLL, RML, LLL, lingula	Hemolytic streptococcus; Esch. coli	440	8	100	23	5
2	35	♂	RUL, RML, RLL, LLL	Hemolytic streptococcus; Micrococcus; Esch. coli	120	9	25	4	5
3	21	♀	RLL, LLL	Pneumococcus; H. influenzae; hemolytic streptococcus; A. aerogenes; Esch. coli	60	5	15	6	5
4	36	♂	RLL, LLL	Hemolytic and green-producing streptococci; Proteus vulgaris; Micrococcus; Esch. coli	350	26	50	5	30
5	33	♂	All lobes	Hemolytic streptococcus; Esch. coli; Monilia albicans	800	30	200	26	100
6	37	♀	RLL, RML, LLL, lingula	Green-producing and hemolytic streptococci; H. influenzae; Esch. coli	120	26	25	14	10
7	36	♂	RLL, LLL	Streptococcus (green-producing); Esch. coli	100	3	80	9	15
8	12	♂	All lobes	Micrococcus; streptococcus (green-producing); H. influenzae; Staph. aureus; Esch. coli; M. albicans	150	7	100	18	20
9	27	♀	RLL, LLL	A. aerogenes; micrococcus; H. influenzae; streptococcus (green-producing)	250	7	175	21	20
10	19	♀	RUL, RML, LLL, RLL	H. influenzae; micrococcus; Esch. coli; streptococcus (green-producing)	480	13	300	8	100
11	26	♂	RLL, LLL	Staph. aureus; H. influenzae; Esch. coli	50	4	40	8	0
12	31	♀	RLL, LUL, LLL, lingula	Micrococcus; Esch. coli; streptococcus (green-producing)	100	20	40	10	20
13	22	♀	RLL, LLL	Str. faecalis; pneumococcus; Esch. coli; A. aerogenes; M. albicans	175	16	75	19	5
14	21	♀	RLL, LLL	Streptococcus (green-producing); Esch. coli; A. aerogenes	60	18	40	6	5
15	60	♀	RLL, LLL	Hemolytic streptococcus; Esch. coli; H. influenzae	350	12	125	6	60
16	16	♀	RLL, LLL	Esch. coli; A. aerogenes	100	12	80	10	20
17	8	♂	RLL, LLL	Esch. coli; Str. faecalis	50	11	60	19	10
18	14	♀	RLL, LLL	Streptococcus (green-producing); Esch. coli; P. vulgaris; micrococcus	125	5	75	20	15
19	27	♂	LLL, RLL	Staph. aureus; Esch. coli	100	5	75	8	50
20	63	♂	RLL, LLL; fibrosis and emphysema	H. influenzae; Esch. coli; M. albicans; hemolytic streptococcus	200	8	150	4	75

Streptomycin hydrochloride was used in combination with penicillin for 6 of the patients (cases 1 to 6) who had responded satisfactorily to penicillin aerosol alone (table 1). Gram-negative organisms had been demonstrated in the sputum of these 6 patients. Further reduction in sputum was obtained from this treatment in each of these 6 cases, and some of these patients became almost free of cough, at least temporarily. An example of this group is shown in figure 4 (case 6, table 1).

The combination of streptomycin and penicillin aerosols was used also for 14 patients who had not responded satisfactorily to penicillin aerosol alone and who had gram-negative bacilli in the sputum. Twelve of these 14 patients obtained a good result by nebulizing the combined solutions. The bronchogram of 1 of these patients is shown in figure 5 (case 9, table 1). This treatment did not reduce by three fourths the volume of sputum of 2 patients. One of these was an elderly man (case 20) who had pulmonary fibrosis and emphysema superimposed on brochiectasis. The other failure occurred in a young man (case 19) who had situs inversus and bronchiectasis. His pulmonary secretions were reduced only 50 per cent after thirteen days of treatment by nebulization.

Thus, with penicillin aerosol alone slightly more than half of the patients treated obtained a 75 per cent reduction in volume of sputum. Of the 20 patients treated with combined penicillin and streptomycin aerosols, 18 obtained a satisfactory result. Admittedly, several of these patients might have done better than they did with penicillin alone if it had been used for a longer period. There were 7 failures in the group of 40 nonsurgical cases. In 2 of these cases penicillin alone and the mixture of penicillin and streptomycin both failed to elicit a good response. The other 5 patients whose response was unsatisfactory never had the opportunity to use nebulized streptomycin. In most instances failure to respond to penicillin aerosol therapy was due to the predominance of gram-negative bacteria in the sputum. However, the ability of the patient to cooperate is an important factor. The very young and the very old do not do well. The presence of emphysema and pulmonary fibrosis associated with bronchiectasis militates against successful treatment. In these patients the mixing of tidal air with residual air has been shown by physiologic measurements to be defective. The drug does not reach the diseased area in effective concentrations.

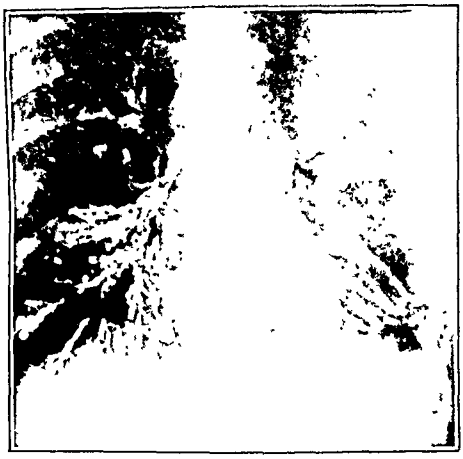

Fig. 4 (case 6, table 1).—Bronchogram of woman aged 37, revealing bilateral bronchiectasis. Penicillin aerosol therapy was used for twenty-six days, with supraglottic instillation of penicillin in addition for the last ten days. The amount of sputum was reduced from 120 to 25 cc. per day. The patient gained 10 pounds (4.5 Kg.) Subsequently streptomycin and penicillin aerosols were administered because Escherichia coli and Hemophilus influenzae were demonstrated in the sputum. The volume of sputum was reduced to practically nothing. The patient has continued treatment at home.

Reactions to either penicillin or streptomycin were uncommon when these drugs were nebulized. When penicillin aerosol was used, urticaria developed in 3 cases and a mild arthralgia in 2. It was found that these symptoms could be controlled by the oral administration of diphenhydramine hydrochloride ("benadryl hydrochloride" N. N. R.). Three patients complained of a sore tongue after several days of nebulization. In several instances a sharp rise in temperature and a chill were noted after administration of streptomycin by inhalations. In most instances this could be attributed to the particular lot of streptomycin used, which was not of standard purity and was not suitable for parenteral administration. Treatment could be continued with a different lot of the drug.

SUPRAGLOTTIC INSTILLATION OF PENICILLIN AND STREPTOMYCIN

The instillation of chemotherapeutic substances into the bronchial tree has been used for several years. Vinson [22] reported on the bronchoscopic insufflation of sulfonamide preparations, and Tucker and Atkins [23] have used similar methods of treatment. May and Floyer [24] and Kay and Meade [25] have treated pulmonary suppuration by instilling penicillin. Romansky and his associates [26] mixed penicillin with iodized oil for instillation into the bronchial tree in cases of bronchiectasis.

Penicillin, streptomycin or combinations of these in solution can be instilled into the trachea in much the same manner that iodized oil is instilled for diagnostic purposes. One hundred and sixty-five instillations have been made in 15 cases at the clinic. Fifty-two of these instillations were made in 3 cases of chronic bronchiectasis, in which nebulization therapy was not used. Two of these 3 patients thought that they were helped by this treatment. One hundred and thirteen instillations were given to 12 patients who were carrying out nebulization therapy. Although results are difficult to evaluate, it is my impression that the direct intratracheal administration of penicillin and streptomycin is a valuable adjunct to nebulization therapy, as illustrated by case 6 of table 1 and in figure 4.

For supraglottic instillation 100,000 units of penicillin sodium in 10 cc. of isotonic solution of sodium chloride and 0.5 Gm. (500,000 streptomycin units) of streptomycin in 5 cc. of the same type of solution were used. Patients can tolerate 10 to 15 cc. of solution at a single daily treatment. Preliminary cocainization of the throat is usually necessary. The material should be instilled slowly. Obviously, some patients are able to cooperate more satisfactorily than others for this treatment.

BACTERIOLOGY OF PULMONARY SECRETIONS

The work on nebulization therapy has stimulated interest in the bacteriologic aspect of pulmonary secretions. I am indebted to Drs. F. R. Heilman and Luther Thompson of the Section on Bacteriology at the clinic, who have carried out hundreds of detailed bacteriologic examinations on sputum. Material was aspirated at the time of bronchoscopic examination, and further specimens of sputum were obtained at regular intervals during the course of nebulization therapy. In many

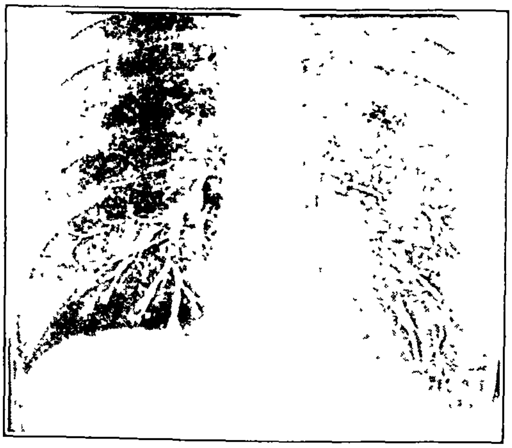

Fig. 5 (case 9, table 1).—Bronchogram of woman aged 27, revealing bilateral bronchiectasis. Treatment with penicillin aerosol for nine days gave little benefit. Aerobacter aerogenes and H. influenzae were demonstrated in the sputum. Streptomycin and penicillin aerosols were given for twenty-one days. The volume of sputum was reduced from 175 to 20 cc. per day and cultures were negative at the conclusion of treatment.

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[22] Vinson, P. P.: Treatment of Chronic Nontuberculous Pulmonary Infection by Bronchoscopy and Insufflation of Sulfonamide Compounds, Ann. Otol., Rhin. & Laryng. **53:** 787-790 (Dec.) 1944.

[23] Tucker, G., and Atkins, J. P.: Recent Trends in the Bronchologic Use of Chemotherapeutic and Biotherapeutic Agents, Ann. Otol., Rhin. & Laryng. **53:** 777-786 (Dec.) 1944.

[24] May, H. B., and Floyer, M. A.: Infected Bronchiectasis Treated with Intratracheal Penicillin, Brit. M. J. **1:** 907-908 (June 30) 1945.

[25] Kay, E. B., and Meade, R. H., Jr.: Penicillin in the Treatment of Chronic Infections of the Lungs and Bronchi: An Analysis of Ninety-Three Cases, J. A. M. A. **129:** 200-204 (Sept. 15) 1945.

[26] Romansky, M. J.; Dugan, D. J., and Rittman, G. E.: Penicillin in Iodized Oil for Instillation into the Lungs, Science **102:** 255-256 (Sept. 7) 1945.

instances in vitro studies have been made to determine the sensitivity of a particular organism to penicillin or streptomycin. Drug resistant bacteria or strains have been encountered.

Smears and cultures of pulmonary secretions were likely to reveal many different types of bacteria in the same patient. After penicillin therapy, gram-positive organisms usually disappeared and gram-negative bacilli often were recognized that could not be identified on the original smears. The types of bacteria and the frequency of occurrence in this series of 86 cases are given in table 2. Neisseria catarrhalis was not included in the list in table 2, as it appears to be a nonpathogenic organism which is present in nearly all sputum. Green-producing streptococci are included in table 2, although their significance is questioned. Adequate bacteriologic studies of pulmonary secretions should be carried out in all cases of pulmonary suppuration in which nebulization therapy is to be undertaken.

COMMENT

New methods of treatment in bronchiectasis should be regarded with a critical attitude. When possible, surgical resection of the affected portion of the bronchial tree is the best treatment. Treatment by nebulization of an antibiotic agent appears to be helpful in the preparation of patients for lobectomy. Reduction of the volume of pulmonary secretions and eradication of many bacterial organisms make surgical resection of one or more lobes of the lung an easier and safer procedure. The use of antibiotic preparations by both the aerosol and parenteral methods of administration should greatly reduce the mortality and morbidity from pulmonary resection for suppurative disease of the lung.

Table 2.—*Micro-Organisms in Pulmonary Secretions: Eighty-Six Cases*

Micro Organisms Demonstrated by Stains and Cultures	Cases
Streptococci	
Green-producing	40
Hemolytic	14
Faecalis	5
Esch coli	33
H. influenzae	16
Micrococcus	10
A aerogenes	8
Pneumococcus	5
Staph aureus	4
Proteus	2
Klebsiella	2
Pseudomonas	2
M albicans	12

When nonsurgical or bilateral bronchiectasis is treated by nebulization therapy, it must be borne in mind that the secondary infection is being treated rather than the primary disease. There is no reason to believe that ectatic bronchi will be restored to normal. Furthermore, it must be borne in mind that the relief of bronchorrhea obtained by nebulization therapy is likely to be temporary. Several of the patients in this series have reported partial or complete recurrence of symptoms following cessation of therapy. Most of the patients have continued to use aerosol penicillin in their own homes after leaving the hospital. It is apparent that the great majority of patients must continue nebulization on an intermittent or modified program if they are to maintain their improvement. Furthermore, it is likely that many bacteria in the bronchial secretions of patients who have bronchiectasis will become resistant to antibiotic preparations, especially streptomycin, as aerosol treatment is continued for long periods. The development of drug-fast bacteria is one of the most serious problems confronting investigators in the field of antibiotic therapy. Nevertheless, patients who suffer from the physical disabilities and social disadvantages of chronic suppurative bronchiectasis are eager to try any treatment which offers them partial relief. Inhalation therapy with penicillin and streptomycin aerosols has proved to be helpful in suppressing the secondary infection which complicates bronchiectasis.

ABSTRACT OF DISCUSSION

Dr. Alvan L Barach, New York: Dr. Olsen's interesting presentation illustrates in a conclusive way that there are certain cases of bronchiectasis in which the combined administration of penicillin and streptomycin aerosols results in prompter and more pronounced improvement than does penicillin alone. Over half of the patients treated with penicillin aerosol alone responded favorably, whereas 18 of 20 cases in his series showed unmistakable benefit with both penicillin and streptomycin aerosols. I should like to discuss the significance of gram-negative organisms in the sputum in these cases. Observations have been made on about 200 cases of bronchopulmonary disease treated with penicillin It is a consistent observation that gram-negative organisms, Escherichia coli or coliform organisms, Bacillus pyocyaneus and Aerobacter aerogenes, appear after one or two weeks of treatment. These organisms frequently continue in the sputum in predominant culture, whether improvement has taken place or has not It appears from the work of Abraham and Chain that many of these organisms, which may be of themselves nonpathogenic, elaborate an enzyme, penicillinase, which inhibits the bacteriostatic activity of penicillin. It is my impression that the favorable results obtained by Dr. Olsen when streptomycin was added to penicillin may be traced to this disappearance of gram-negative organisms and, therefore, to the absence of the enzyme penicillinase. Experience has shown that patients with bronchiectasis may not improve for one or two weeks, even with combined intramuscular injection of penicillin and penicillin aerosol, but that in three to five weeks definite improvement may take place The problem of chronic disease must be studied from a different point of view than that from which acute infection is treated. Chronic swelling of the mucous membrane may take a long time to disappear. It will require a good deal more time before it is possible to determine the significance of gram-negative organisms and how they may best be treated My belief is that whereas streptomycin results in a prompt improvement in a far larger proportion of cases, perhaps somewhat larger doses of penicillin over somewhat longer periods of time may result in clinical improvement in severe cases of bronchiectasis and in improvement sufficient to make these people who are semi-invalids capable of carrying on a reasonably active life without purulent sputum and the danger of progressive infection.

Dr. Maurice S. Segal, Boston: I am in agreement with Olsen's observations and have found penicillin aerosols effective in a series of 42 patients with chronic bronchiectasis. Eight patients with bronchiectasis subsequently underwent surgical intervention, and there were no postoperative complications. Fourteen were considered unsuitable for surgical intervention because of multiple lobular involvement. Temporary clinical improvement was observed in this group. Recurrence of symptoms, however, appeared in most of these cases within one to six months Twenty patients with involvement of one or two lobes, mostly lingular, were considered ideal for purely medical observation Definite clinical improvement was observed in 14 of these patients. Many had previously received courses of parenteral penicillin and oral sulfonamide drugs without appreciable improvement. Remissions for as long as a year and a half were observed in 2 patients of this group There was no recurrence of pneumonitis in 6 of this group for a period up to five months I consider the minimum course of treatment six weeks and repeat therapy, in this latter group particularly, at intervals of three months for at least one year. Seven patients with chronic sinusitis complicated by bronchiectasis have been treated. They responded well to aerosol therapy directed via the nasal and pulmonary route while in the hospital, but in almost all these cases the infection returned to the sinuses within several weeks of therapy. Intermittent negative suction and pressure therapy, as described by Dr. Barach, were not employed. Streptomycin aerosol was employed for the management of gram-negative Friedländer organisms in 2 patients with bronchiectasis. With repeated use of streptomycin, there was observed the rapid development of resistive strains which could not be eradicated despite tremendous doses. I have not observed the appearance of penicillin-resistive strains in patients treated with penicillin aerosol. I have found the occasional intrabronchial instillation of penicillin alone or with streptomycin following bronchoscopic aspiration of considerable help in combating the more serious types of infection associated with extensive suppurative disease. I and my associates are also attempting to combine therapeutic agents with penicillin aerosol to delay its absorption through the pulmonary tree. Preliminary studies suggest that "neosynephrine" (N. N. R.) may be employed to achieve greater topical efficacy and less systemic effect.

Dr. A. M. Olsen, Rochester, Minn.: I wish to thank Dr. Barach and Dr. Segal for their kindness in discussing my paper. I do think that inhalation therapy has a definite place in the treatment of respiratory disease. I do not consider that at present inhalation therapy, particularly with the use of antibiotics, should be the method employed in systemic diseases that have no relationship to the respiratory tract. I was interested in Dr. Barach's possible explanation of the effect of streptomycin on gram-negative bacteria: the suggestion that these gram-negative bacteria may have a "penicillinase" which prevents the penicillin from acting effectively.

Clinical Notes, Suggestions and New Instruments

CHRONIC ERYSIPELOID (SWINE ERYSIPELAS) IN A MAN

The Effect of Treatment with Penicillin

GEORGE W. STILES, M.D., Ph.D.
Denver

Disease transmission from the lower animals to man is being recognized by the medical profession as of increasing importance in the control of many infectious maladies. One of these problems is swine erysipelas (erysipeloid in man) usually acquired by contact with diseased animals or their infected products.

The publications of Ehrlich,[1] Klauder,[2] Van Es [3] and others illustrate the hazard in dealing with infected animals on the farm or in the public abattoir, the laboratory, the fish market or the button factory.

During recent years the Denver Branch Pathological Laboratory of the United States Bureau of Animal Industry has diagnosed upward of 1,000 positive cases of erysipelas in swine, including a few arthritic lambs and diseased turkeys.[4] The diagnosis of these animals was made by serologic tests and the isolation of the swine erysipelas organism in most instances. The research on animals was made jointly by C. L. Davis, D.V.M., bureau pathologist, and me.

Samples of blood from 170 human subjects were tested for possible erysipeloid infection. Some of these specimens were furnished by the Colorado State Board of Health, to which they had been submitted for Wassermann tests; others came from the University of Colorado School of Medicine, and the remainder I drew from persons giving a history and showing symptoms or lesions of possible erysipeloid. Of this number, 30, or 17.5 per cent, gave positive reactions with swine erysipelas antigen in titers of 1:50 and upward. Four specimens gave reactions in a titer of 1:25 only and were considered suspicious. A reaction in a dilution of 1:50 was suggestive of probable infection with Erysipelothrix rhusiopathiae.

The serums from reacting human subjects came from persons largely engaged in meat-packing establishments or from livestock owners who had handled diseased swine. Suspicious or nonreacting samples were from persons whose history did not indicate active infection due to erysipelothrix.

Serums from 3 of the positive cases were submitted by Dr. J. V. Klauder of Philadelphia, and 10 of his 13 specimens proved negative in titers of 1:50. The history of 8 of these negative reactors suggested possible early cases of erysipeloid clinically, before the development of antibodies, whereas the cases of the 3 positive reactors were definitely diagnosed clinically as erysipeloid. Two of Klauder's 10 serologically negative cases were reported as clinically negative.

A specimen of human serum from a young soldier in a local hospital was classified as that of a patient with scarlet fever. The complete history in this case is unavailable. The reaction of the serum was positive in dilutions up to 1:1,000 with swine erysipelas antigen, and the reaction of the serum is still positive after it has been held in the refrigerator for over two years. The urticarial form of chronic swine erysipelas closely resembles the rash seen in human scarlet fever.

It is possible that this serum test would be of diagnostic value in the case of human beings with chronic arthritis of unknown cause, especially if the previous history indicated contact with diseased swine or other related occupational hazards. The symptoms of chronic arthritis of swine are not unlike symptoms of this disease observed in man.

As a result of the experience gained in testing both human and animal serums, I believe that the agglutination test offers a valuable aid in establishing a probable diagnosis of erysipeloid, perhaps of equal importance with similar reactions of the blood in typhoid fever and brucellosis.

This paper is presented because of the long duration period of infection apparently due to erysipelothrix in a man; the report is based on the history, clinical symptoms and a positive serologic reaction obtained with swine erysipelas antigen.

REPORT OF CASE

History.—J. M. was a man aged 27 at the time of infection, whose usual weight was from 185 to 190 pounds (84 to 86 Kg.). He was born on a ranch near Falls City, Neb. His previous history revealed the usual diseases of childhood without serious complications. On the death of his father (1919) the management of the farm passed to two brothers, the patient herein concerned and his elder brother, now a practicing veterinarian in that vicinity. Among other livestock raised on this farm were many swine, and during some years as many as four hundred head were raised on the premises. The herd was protected against hog cholera (a virus disease) by annual vaccination, but many swine died from other causes.

The symptoms, lesions involving the skin (either urticaria or sloughing backs) and arthritis, as well as hog specimens submitted to an animal biologic laboratory at Lincoln, Neb., proved that some losses were doubtless due to swine erysipelas. Through personal correspondence it was determined that E. rhusiopathiae had been recovered from hog specimens from this ranch, which had been submitted for examination by the brother who was a veterinarian. Swine erysipelas is known to be widely prevalent among hogs in Nebraska and in many other swine-producing areas.

It was a common practice for the farmer patient to handle acutely sick or chronically infected hogs and at the time of slaughtering his own hogs to reject an occasional animal for food because of its apparent illness. The initial infection of the thumb reported in this case was acquired under the aforementioned circumstances.

Bacteriologist in charge of the Branch Laboratory, Pathological Division, Bureau of Animal Industry, United States Department of Agriculture.

[1] Ehrlich, J. C.: Erysipelothrix Rhusiopathiae Infection in Man: Report of a Case with Cutaneous Bullae in Which Cure Was Achieved with Penicillin, Arch. Int. Med. **78:** 565-577 (Nov.) 1946.

[2] Klauder, J. V.: Erysipeloid as An Occupational Disease, J. A. M. A. **111:** 1345-1348 (Oct. 8) 1938.

[3] Van Es, L.: Swine Erysipelas Infection in Man, Research Bulletin 130, University of Nebraska Experiment Station, August 1943 (115 references appended).

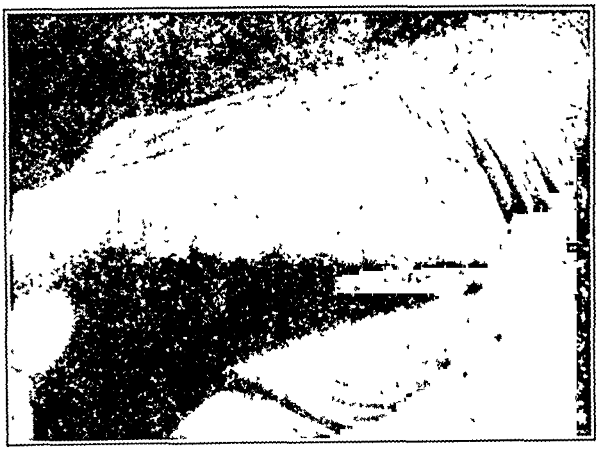
[4] Stiles, G. W., and Davis, C. L.: Swine Erysipelas and Its Economic Importance, J. A. Vet. M. A. **84:** 895-906 (June) 1934. Stiles, G. W.: Observations of Swine Erysipelas in Turkeys (Including the Public Health Aspect and Possible Human Cases), ibid. **109:** 65-69 (July) 1946.

Symptoms.—The onset of illness[5] began Dec. 8, 1936 and was first observed as a small circumscribed vesicle, or papule, appearing on the right thumb, midway between the first and second joints. This lesion became more diffuse and erythematous in character and slowly spread to the fingers, palm and dorsum of the right hand and later to the left hand. Within a few months the infection appeared on both feet, but the lesions did not extend beyond the wrists or ankles at any time.

The skin of the affected areas assumed a darkened, discolored, purplish red color, and sloughing occurred, particularly on the palms of the hands. At least three crops of new skin appeared, each one following the desquamation of the dead tissue. The denuded skin had an offensive odor, and intense itching accompanied the disease process. Suppuration, or the formation of pus, did not occur during the period of illness.

The general systemic symptoms were not pronounced. The highest temperature reported was 101.6 F., but the patient had occasional chills, was mentally depressed, had frequent headaches and experienced arthritic or rheumatic pains, especially in his hips and shoulders.

His appetite was poor; he was debilitated and weak and had a tired feeling. His weight dropped from about 190 pounds (86 Kg.) to 135 pounds (61 Kg.). This state continued for nearly nine months, from Dec. 8, 1936 to Aug 23, 1937. During this period he was unable to work, to dress or to feed himself and was under the constant care of his wife, a trained nurse.



Condition of the hand just prior to treatment.

Finally by the use of roentgen treatments, the application of boric acid ointment and other forms of medication, he improved sufficiently to resume his work on the farm. However, the skin of his feet and hands never became entirely normal, and successive crops of small watery blisters appeared at frequent intervals.

On Oct. 28, 1940, nearly four years after the onset of the first acute attack (Dec. 8, 1936), the patient suffered a relapse, or reinfection, and experienced the same general symptoms as previously described. This period lasted until Jan. 5, 1941—about ten weeks. The initial lesion this time occurred as a watery blister on the second finger of the right hand.

During the second attack he visited a well known clinic and was under observation about two weeks. Cultures from his skin revealed the presence of streptococci, and skin tests for fungous disease proved negative. His case remained undiagnosed and was considered due to possible allergy or exposure to chemical irritants.

A series of treatments prescribed by his physicians, including the use of sulfathiazole ointment, relieved his cutaneous condition somewhat. Some weight was regained and his general health improved, but his hands were never completely free from crops of irritating, itchy, discrete vesicles (see the accompanying illustration). During January 1945 the patient left his Nebraska farm (and the infected swine) and moved to Denver.

By a strange coincidence, through the interest of a mutual friend, a layman who previously had worked in a hog cholera serum plant, this man's plight came to my attention. A specimen of blood from this man was requested, which was secured by his family physician, A. W. Metcalf, M.D., of Denver, and subjected to laboratory testing.

Laboratory Data.—The patient's serum was first tested for brucellosis by both the rapid plate and tube agglutination methods. The results were negative for each in titers of 1:25, 1:50, 1:100, 1:200 and 1:400. A more complete and detailed history was then obtained, which revealed contact with diseased hogs and a chronic urticarial cutaneous involvement. This evidence led to the testing of the serum for possible erysipeloid infection, which testing gave positive reactions in titers of 1:25, 1:50, 1:100, 1:200 and 1:400. In the absence of rapid plate antigen at this time, the tube method was used and the antigen applied was prepared from a proven swine strain of E. rhusiopathiae. Later the serum was checked by the plate method, using the rapid antigen prepared by the Bureau of Animal Industry; the results obtained were comparable with those from the tube method.

After serologic evidence of probable swine erysipelas infection had been obtained, I attempted to recover the organism on culture from small vesicles on the hands. Repeated efforts failed to demonstrate E. rhusiopathiae. The only bacteria recovered were gram-positive cocci commonly found on the skin.

Schoening and Creech[6] have recorded their serologic observations on erysipelas in swine, also in a single acute human case (positive in a dilution of 1:1,000) of erysipeloid. The results on the latter are summarized as follows: "Although no bacteriological confirmation of the diagnosis of infection with Erysipelothrix rhusiopathiae in this case was obtained, the history, clinical symptoms, and results of the serologic tests leave little doubt as to the correctness of the diagnosis. The agglutination reaction parallels rather closely the results obtained in certain types of infection in swine."

Ehrlich[1] reported a case of erysipeloid in a farmer following the slaughter and dressing of a sick hog. The diagnosis of infection due to erysipelothrix was largely established by the rising titer of agglutinins in the patient's serum and by the presence of characteristic bacilli in sections of a cutaneous lesion. The Pathological Division of the Bureau of Animal Industry of the United States Department of Agriculture made the agglutination tests on samples of serum from the patient which proved positive in a titer of 1:1,000. The antigen used was prepared by the Bureau of Animal Industry, and the same type of antigen was used in making the agglutination tests on the case herein reported. On cultures the bureau also recovered E. rhusiopathiae from the skin and joint lesions of the infected hog slaughtered by the farmer, and intensive treatment with penicillin effected a complete recovery of the patient in Ehrlich's case.

Treatment.—After the positive serologic laboratory observations for erysipeloid were made, the probable diagnosis was discussed with the attending physician, who decided to treat the patient with penicillin. Injections of 25,000 units of penicillin were begun March 19, 1945 and made every three hours intramuscularly until 600,000 units had been administered.

Frequent observations on this patient during two years following the penicillin therapy showed that he had completely recovered from the distressing symptoms experienced for nearly nine years prior to treatment.

His mental outlook, facial expression and general appearance had changed decidedly. He has regained his normal weight. The cutaneous lesions and itching have completely disappeared, and the arthritic pains are forgotten. Thus far no recurrence of the troublesome lesions of the skin has appeared, and he has been steadily employed during this period and acts and feels "like a new man."

About one year after treatment with penicillin the blood from the patient, discussed in the present paper, was again tested for E. rhusiopathiae by the rapid plate antigen method, with negative results, in a titer of 1:25 and upward.

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[5] The information relative to the case history, circumstances and symptoms herein reported was secured from repeated questioning of both the patient and his wife

[6] Schoening, H. W., and Creech, G. T., Serological Studies of Swine Erysipelas with Particular Reference to Agglutination, J. Agric. Research, Jan. 1, 1938, pp. 71-79.

SUMMARY

1. The source of infection in a man with a chronic case of probable erysipeloid of nearly nine years' duration was doubtless on a hog ranch where swine erysipelas was present.

2. Serologic tests with swine erysipelas antigen gave positive results for the organism Erysipelothrix rhusiopathiae in a titer of 1:400.

3. Treatment with 600,000 units of penicillin cleared up the lesions, and there has been no recurrence after two years.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following statement.

AUSTIN SMITH, M.D., *Secretary.*

ALLERGASOL (CHEMTRONIC LABORATORIES):

Racemic Epinephrine, C. O. D.

According to letters and mimeographed advertising circularized through the mails by Chemtronic Laboratories, 194 Malvern Street, Newark 5, N. J., physicians are being offered participation in a promotion scheme to sell a solution of racemic epinephrine under the name Allergasol, to be used with a nebulizer, for inhalation therapy of asthma, and as a spray or eyewash for the eyes in hay fever.

The firm's proposal offers what is termed a streamlined distribution plan, according to which physicians are requested to send in the names and addresses of patients who are to receive Allergasol, and it will then be mailed to them directly C. O. D. The scheme reveals itself in the following statement: "As this is a repeat.item, we will watch the frequency of the first reorders and then arrange to have the solution arrive before they run out." The words "run out" might have special significance for the patients!

The "plan" unfolds as an offer for a 25 per cent physician's discount, on the original and all reorders, that is to be remitted by check every three months, "timed to arrive just before income tax payments are due, and before Christmas" The cooperation of the physician is sought by the following confidences:

"We must work out a cost schedule under this method of operation, so have purposely priced the solution at $3 for the start. The final price will reflect all economies. Your part in this plan can be summed up this way, you recommend and make just one list of your patients, we do everything else, you are not bothered at all on repeat orders."

The final "come on" to the physician appears in the following paragraph:

"You are one of the first of a selected list of physicians to receive this plan. Your suggestions and comments will be invaluable to us. The consensus of opinion as expressed on the question blank, will determine future changes in the plan, the directions, the literature and even the name of the product. Our purpose is to get the best product to the patient at the least cost, we feel sure that this is a mutual aim. Altho the plan is radical, do you consider it unethical? Every phase of our association must meet with your approval, if this plan is to succeed. Please let us have your list of patients as soon as possible."

The "plan" includes a yes-no questionnaire that provides a space for listing allergy patients and the names of individuals merely known to be allergic. The physician is asked if he would suggest that the firm follow the usual methods of distribution, even if it meant a $5 price. The "plan" is thus nothing more than an ill disguised scheme for prescribing by mail in which the physician is enjoined to play the part of accessory.

Allergasol itself is marketed in sealed 1 ounce brown glass bottles labeled "The Scientific Inhalant Relief For Non-Cardiac Asthma Paroxysms, Also Hay-Fever and Similar Allergies, To Be Used Only with Glass Nebulizer." Superimposed on the center panel of the label, in red script, is the statement "With 25 mg. Vitamin C Added." The side panel bears the following statement of composition:

> Each fluid ounce contains .75 g. Epinephrine Hydrochloride crystals. .015 g. Benzoic Acid, .15 g. Cloretone (Chloroform derivative) .0225 g. Sodium Bisulfite as preservatives in Glycerine base solution.

The bottled solution is accompanied by a package circular of instructions for users that is apparently designed to comply with federal drug regulations. Curiously, the package circular is concluded with the designation "1:100 U. S. P.," whereas according to the label the solution represents a 2.5 per cent concentration (1:40) and is elsewhere claimed to contain racemic epinephrine!

The "plan" is circularized with a mimeographed advertising piece that offers a curious hodgepodge of unsupported statements intended to persuade the unwary of the advantages of Allergasol. The premise on which arguments in its behalf are presented are so faulty that only the more credulous will fall prey to such advertising.

The claimed advantages for racemic epinephrine as opposed to levorotatory epinephrine U. S. P. have been previously shown by the Council to be groundless.[1] The claim that the dextrorotatory component of racemic epinephrine is longer acting than the more potent levorotatory epinephrine, and that together these exert a synergistic effect, has not been demonstrated to offer any therapeutic advantage in the use of epinephrine. Indeed, because of the lesser potency of d-epinephrine, racemic or dl-epinephrine can be expected to have only slightly more than half the potency of l-epinephrine (U. S. P.), when solutions of equimolar concentration are compared; a fact admitted by purveyors of racemic solutions by the simple declaration that they contain an amount equivalent to more than twice the concentration of the official solution of epinephrine hydrochloride 1:100 (0.1 per cent)!

The statement that an improvement in the commercial production of the hydrochloride crystals renders Allergasol more stable and less irritating is as meaningless as it is utterly foolish. The claim that Allergasol will not oxidize as readily as other epinephrine solutions is obviously based on the declared presence of two commonly added antioxidants, chlorobutanol (chloretone) and sodium bisulfite, that are supplemented by the addition of ascorbic acid to render the solution further resistant to oxidation. The statement that "the use of this vitamin in such a manner has a healing and non-irritating effect on the lung tissues" is a misrepresentation that cannot be supported by scientific evidence. The point made that, "as epinephrine is quickly decomposed by iron salts and alkalis, an all glass nebulizer has to be used with this solution" represents another attempt to inspire confidence by restatement of a known fact. One may well question the claimed resistance to oxidation of Allergasol that at the same time requires protection from light provided by the brown glass bottle in which it is marketed. All the "hullaballoo" over the ability of Allergasol to withstand deterioration may be appropriately classified as "stable" nonsense!

The crowning insult of the promoter's advertising lies in the statement that:

"The patient can administer treatment himself with safety, as only the actual amount of epinephrine needed to bring relief is taken, and this amount is very small."

The unsupervised use of orally inhaled epinephrine is potentially dangerous from the point of view of overdosage in patients unsuited or unaccustomed to its effects. Epinephrine "fast" asthmatics may not obtain relief even by overdosage with oral inhalations—the real hazard of unsupervised self medication with such a potent drug!

The Council cannot too strongly condemn the vicious character of promoters' schemes that are more interested "by hook or crook" in sales volume than in the welfare of the patient, economic or otherwise. Physicians who have read the other reports of the Council will recognize the familiar patter associated with the promotion of questionable practices. While the names may differ the selling talk is usually the same, regardless of the nature of the scheme immediately concerned.

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[1] Report of the Council: Status of Racemic Epinephrine for Oral Inhalation: Vaponefrin, Asthmanefrin, Solution (or Inhalant) A, Neosol and Solution (or Inhalant) Not Acceptable for N. N. R., J. A. M. A. **119:** 287 (Sept. 26) 1942.

THE JOURNAL OF THE
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SATURDAY, JULY 12, 1947

METHIONINE IN HUMAN NUTRITION

Methionine and cystine are the only two sulfur-containing amino acids. Methionine is considered essential for animal growth, as it can substitute completely for cystine, whereas the opposite is not true. Early in the history of research on nutrition it was noted that the addition of small quantities of cystine improved the nutritive value of casein. This fundamental observation was first made in 1915 by Osborne and Mendel.[1] Casein, however, is not the only protein in milk, and lactalbumin was shown not to share this defect. In the nutrition of babies these facts seemed to explain in part the nutritional superiority of mother's over cow's milk, since the protein content of the former contains 60 per cent lactalbumin as compared with about 15 per cent in cow's milk. These considerations presumably did not apply to the adult, because the amino acid requirements for maintenance are less urgent than for growth. Early studies by Madden, Hoehren, Waraich and Whipple[2] indicated that cystine was a key amino acid for the regeneration of serum protein in adult dogs. Kemmerer and Heil[3] obtained the same effect with methionine shortly after. More recently, Croft and Peters[4] found that the addition of a small amount of this amino acid to the diet of adult rats previously burned enabled them to achieve nitrogen balance not possible in the controls. These authors made the suggestion, therefore, that methionine or a protein containing a large percentage of it might be of some therapeutic value in the nutrition of the sick, particularly those subjected to injury. A number of clinical observations during the war were made on patients with hepatitis; the addition of methionine seemed to exert a favorable clinical effect. This therapeutic idea aroused much interest, although the evidence is hard to evaluate. Dissenting data as to the value of methionine supplementation in man were reported by Riegel, Koop and Grigger,[5] who obtained negative results in 14 patients, particularly following operations. Confirmatory negative evidence was reported by Johnson, Deuel, Morehouse and Mehl,[6] employing diets containing a mixture of proteins.

More information was obviously needed, both in animals and in human beings. Such data have recently been reported by a group of investigators, Cox, Mueller, Elman, Albanese, Kemmerer, Barton and Holt,[7] who combined the research facilities of a pharmaceutical house, Mead Johnson and Company of Evansville, Ind., and two universities, Washington University of St. Louis and New York University of New York. These studies show definitely that there is a clear difference between human beings and animals with regard to their respective requirements for methionine, not only for growth, but also for nitrogen balance. Observations were made on rats, on dogs and on human beings. In dogs, the addition of small amounts of methionine was shown to improve the degree of nitrogen retention following the intravenous and subcutaneous injection of a casein hydrolysate. This property was not shared by the addition of any of the other essential amino acids. In rats the same hydrolysate was shown to give a greater average gain in weight with a supplement of methionine. In striking contrast, the observations on human beings were entirely negative. The first group consisted of 3 patients with pyloric obstruction, being prepared for operation, who were fed entirely by vein. The addition of methionine to the casein hydrolysate did not influence the magnitude of nitrogen balance. The second group consisted of 2 normal infants who were given the same casein hydrolysate by mouth. The amount of nitrogen retained and the gain in weight, compared during five day periods before and after the substitution of a small amount of methionine for the same amount of nitrogen in the feeding, did not show a significant difference. The third group consisted of 10 adult volunteers divided into two teams. One received a maintenance level of nitrogen and the other, following a twenty-one day period of protein starvation, received a level of nitrogen approximately equal to the endogenous loss. Differences were not found in the degree of nitrogen retention in either series, whether or not the methionine content of the casein hydrolysate was increased. Since the principal difference between casein and lactalbumin is in their relative content of the sulfur-containing amino acids, it is justifiable to interpret these data by a supplemented casein hydrolysate in terms of the two intact proteins.

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[1] Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **20:** 351 (March) 1915.

[2] Madden, S. C.; Hoehren, W. A.; Waraich, G. S., and Whipple, G. H.: J. Exper. Med. **69:** 721 (May) 1939.

[3] Kemmerer, K. S., and Heil, G. P.: Proc. Soc. Exper. Biol. & Med. **44:** 122 (May) 1940.

[4] Croft, P. B., and Peters, R. A.: Lancet **1:** 266 (March 3) 1945.

[5] Riegel, Cecilia; Koop, C. E., and Grigger, R. P.: Proc. Soc. Exper. Biol. & Med. **62:** 7 (May) 1946.

[6] Johnson, R. M.; Deuel, H. J., Jr.; Morehouse, M. G., and Mehl, J. W.: J. Nutrition **33:** 371 (April) 1947.

[7] Cox, W. M.; Mueller, A. J.; Elman, Robert; Albanese, A. A.; Kemmerer, K. S.; Barton, R. W., and Holt, L. E.: J. Nutrition **33:** 437 (April) 1947.

These results are so striking and consistent that they indicate a greater need for sulfur-containing amino acids in animals than in human beings, not only for maintenance, but also for growth. The authors suggest that this fundamental difference may be due to the fact that the animals studied were covered with hair. Since hair contains large amounts of cystine, it is reasonable to suppose that the requirement of the rat and the dog for this amino acid or methionine is considerably greater than that of man. Whether or not this explanation is true, the results emphasize again a basic admonition in biologic work: observations made on animals do not necessarily apply to man. The results have a great practical bearing in considering the nutritive value of milk proteins, which are widely used as a source of human food. Casein has long been considered inferior to lactalbumin because of its lower content of the sulfur-containing amino acids. This is apparently true only when it is fed to fur-bearing animals. But man requires less of this essential amino acid, and it is most reassuring that the protein efficiency of the two proteins of milk are therefore of the same order for man. The specific therapeutic virtues that have been attributed to methionine by a number of investigators should be carefully reevaluated. This present study clarifies much of the confusion which now exists as to the nutritional requirements for methionine in man.

SUPERIOR PULMONARY SULCUS PRESSURE SYNDROME

It has been pointed out by Fulton [1] and others [2] that the so-called Pancoast syndrome was first described by Edward Selleck Hare [3] in 1838, at which time Hare was house surgeon at the Stafford County General Infirmary in England. Hare's patient complained of pain, tingling and numbness of the left arm, corresponding to the distribution of the ulnar nerve. There was a small tumor in the "inferior triangular space." Hare attributed the pain to involvement of the brachial plexus and observed that "the pupil of the left eye became contracted and the levator palpebrae ceased to perform its office." Necropsy revealed:

> . . . a tumor process the hardness of scirrhus . . . extending under the sterno-cleido-mastoideus and trapezius . . . and was seen to extend upward as far as the origin of the brachial plexus. The carotid artery, internal jugular vein and pneumogastric nerve passed into its substance, the first remaining pervious, the two last were lost and transformed into the diseased structure, as was also the phrenic nerve and, farther down, the sympathetic, with its lowest cervical ganglion. The tumor lay upon the 3rd and 4th nerves of the plexus, both of which were inseparable from it.

Nearly a century later Pancoast [4] described the same syndrome almost exclusively on the basis of roentgenologic evidence. According to Pancoast it is characterized by constant localization of an epidermoid carcinoma in the superior thoracic inlet adjacent to the pulmonary apex, the site of origin being independent of the neighboring lung, pleura, ribs, vertebrae and mediastinum or of metastatic foci. Clinically, the components are Horner's syndrome, indicating involvement of the cervical sympathetic nerve; pain referred to the shoulder, arm and hand associated with muscular atrophy, indicative of invasion of the brachial plexus; the presence in the roentgenogram of a small homogeneous apical shadow together with signs of destructive infiltration of contiguous ribs and vertebrae. Pancoast believed that the tumor was of branchial origin because of its constant localization in the region where branchial clefts are apt to persist, because of the absence of any other demonstrable focus and, finally, because in one case where tissue was removed for biopsy microscopic examination showed a squamous carcinoma in which the changes were compatible with those of an epithelial new growth of branchiogenic origin. However, it has since been shown that practically any form of pressure, if properly applied, may cause the syndrome in question. In the cases reviewed by Morris and Harken [2] the tumor which produced the symptoms by pressure was probably of branchiogenic origin in 20, osteogenic sarcoma in 2, sympathicoblastoma in 1, metastatic gastric carcinoma in 1, metastatic mammary carcinoma in 1, metastatic hypernephroma in 1 and cancer of the thymus in 1. Morris and Harken pointed out that there are several instances in which the syndrome was caused by the pressure of an aneurysm, apparently the first description of this sort having been found in the Bellevue Hospital necropsy records for the year 1868, or one year before Horner described the syndrome which bears his name.

Thus it appears that Hare described what is now called Horner's syndrome thirty-one years before the ophthalmologist Horner described it and what is now called Pancoast's syndrome ninety-six years before Pancoast described it. From all that is known of the remarkable syndrome due to pressure at the superior pulmonary sulcus it seems that the condition was first described by Hare and that the eponymic distinction belongs to him.

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[1] Fulton, J. F.: Horner and the Syndrome of Paralysis of the Cervical Sympathetic, Arch. Surg. **18**: 2025 (April) 1929.

[2] Browder, J. and deVeer, A.: Am. J. Cancer **24**: 507 (July) 1935. Morris, J. H., and Harken, D. E.: Ann. Surg. **112**: 1 (July) 1940.

[3] Hare, E. S.: London M. Gaz. **1**: 16, 1838.

[4] Pancoast, H. K.: Superior Pulmonary Sulcus Tumor, J. A. M. A. **99**: 1391 (Oct. 22) 1932.

Current Comment

THE DOCTOR AND VOCATIONAL REHABILITATION

Physicians will shortly receive through the mail a booklet entitled "The Doctor and Vocational Rehabilitation for Civilians" prepared for their special information by the Office of Vocational Rehabilitation of the Federal Security Agency. This describes an exceedingly important medicosocial activity in which every practicing physician has a considerable stake. Successful rehabilitation for civilians under the present statutes cannot operate successfully without the honest and wholehearted cooperation of medical practitioners. This state-federal vocational program has provided itself with excellent medical and technical advice respecting general policy and administration. But the individual physician must discover eligible candidates, conduct the preliminary physical examinations and in most cases manage the physical restoration phases of the rehabilitation process. There are thousands of eligible candidates for rehabilitation. Each year the number of new cases constitutes in itself an enormous clinical and training problem. At present every state and territory is actively engaged in this work. The booklet has been prepared by the medical staff of the Office of Vocational Rehabilitation. Apparently this federal agency in company with appropriate state agencies is striving to administer a public program in a manner acceptable to physicians.

ANTHRAX

Heretofore human anthrax has been considered a rare disease limited almost entirely to persons engaged in the leather and hide industries or living in agricultural regions. A recent survey by the U. S. Public Health Service of the period from 1939 to 1943 showed not only a 16 per cent increase of cases of anthrax for that period, but that the infection occurred in people who did not have occupational contact with infected material. One patient was a child living in a mining location in a state where animal anthrax had been unknown for ten years. Other patients were housewives, some of whom had been gardening; other persons contracted the disease from tooth brushes, shaving brushes and a fur coat. Cowdery[1] reports the unusual occurrence of pulmonary anthrax with septicemia in a man aged 46 who apparently had none of the usual means of acquiring the infection. He points out that human anthrax is not rare in the United States. A review of the literature, however, indicated that pulmonary anthrax was extremely rare until recently. In the last ten years he said only one detailed report of a case of primary internal anthrax had appeared. Cowdery believes that physicians can no longer consider anthrax as being limited to industrial and agricultural areas but that the disease may occur almost anywhere.

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[1] Cowdery, John S.: Primary Pulmonary Anthrax with Septicemia, Arch. Path. **43**: 396 (April) 1947.

METHYLATED XANTHINES AND BLOOD CLOTTING

Methylated xanthines have been widely used for years in the treatment of certain conditions involving the clotting activity of the blood, such as coronary thrombosis. Since it has been reported that methylated xanthines in experimental animals increase the prothrombin level of the blood and increase its coagulability, it is important to know whether any adverse effect might follow such administration. Gilbert and his colleagues[1] carried out studies on human beings and dogs to determine whether or not the prolonged administration of methylated xanthines has any effect on clotting activity. Neither the animal experiments nor the clinical observations, which were based on 25 patients chosen at random, revealed any changes in prothrombin time, clotting time of the blood or heparin curve as the result of the administration of these drugs. The obvious deduction is that the administration of methylated xanthines will not be harmful as far as the clotting mechanism of the blood is concerned.

CANCER CELLS IN PROSTATIC SECRETIONS

Herbut and Lubin[1] note that not more than 20 per cent of all cancers of the prostate are amenable to radical intervention when first seen. The improvement in the diagnosis of pulmonary carcinoma through examination of bronchial secretions suggested that the cytologic method may be useful in the diagnosis of cancer of the prostate. Mulholland[2] of the Mayo Clinic reported on this method fifteen years ago but did not follow up his original report. In the procedure advocated by Herbut and Lubin prostatic secretions are obtained by massage and stained by the Papanicolaou technic. The criteria for the diagnosis of carcinoma from prostatic secretions are (1) the presence of an unusual number of multicolored pavement cells and (2) the presence of cancer cells. Although the significance of the pavement cells is not clear, these authors believe that they are derived from the urethra and that they are specific for carcinoma because they have not been encountered in any of the smears from noncancerous patients. However, the more important criterion is the identification of cancer cells. Their neoplastic character is proved by the fact that they are found only in cases of carcinoma and that they are identical with cells encountered in smears of the tumor tissue itself. The problem of identifying cancer cells in prostatic secretions is much easier than it is in vaginal or bronchial secretions because the prostatic secretions from noncancerous patients contain only a few epithelial cells. The authors have examined prostatic secretions from 100 patients and made a cytologic diagnosis of carcinoma in 17 of these. This diagnosis was confirmed histologically in 10 of these cases and was reasonably certain clinically in an additional 6.

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[1] Gilbert, N. C.; Dey, Frederick, and Trump, Ruth: The Effect of the Methylated Xanthines on the Clotting Time of the Blood, J. Lab. & Clin. Med. **32**: 28 (Jan.) 1947.

[1] Herbut, P. A., and Lubin, E. N.: Cancer Cells in Prostatic Secretions, J. Urol. **57**: 542 (March) 1947.

[2] Mulholland, S. W.: A Study of Prostatic Secretion and Its Relation to Malignancy, Proc. Staff Meet., Mayo Clin. **6**: 733 (Dec. 16) 1931.

ORGANIZATION SECTION

Official Notes

THE 1948 ANNUAL SESSION

The Ninety-Seventh Annual Session of the American Medical Association will be held in Chicago June 21 to 25, 1948. It is probable that on Sunday, June 20, preceding the first day of the session there will be various meetings and conferences for which arrangements will be made by the Association.

Council on Medical Service

MIDDLE ATLANTIC STATES REGIONAL CONFERENCE ON MEDICAL SERVICE

May 22, 1947

The midyear meeting of the Middle Atlantic States Regional Conference on Medical Service was held in Philadelphia, May 22. This conference is a permanent organization composed of six state medical societies: New York, Pennsylvania, Virginia, New Jersey, Delaware and Maryland. Organized in 1945, the conference has held meetings semiannually. The present officers are Dr. F. F. Borzell, Philadelphia, chairman; Dr. T. A. McGoldrick, Brooklyn, vice chairman, and Dr. W. M. Bates, Philadelphia, secretary-treasurer.

The program for the May 22 meeting was in the form of round table discussions on:

1. Present Status of United Mine Workers Health Program.
2. Organized Medicine's Relationship to the Various Cancer Drives.
3. The Present Taft-Smith-Ball-Donnell bill.
4. The Hill-Burton Hospital Construction Act.
5. Changes in the medical policy of the Veterans Administration.

Status of U. M. W. Health Program.—Dr. Walter B. Martin, Norfolk, Va., a member of the Council on Medical Service of the American Medical Association, acted as moderator. Dr. Louis W. Jones, Wilkes-Barre, Pa., chairman of the Medical Economics Committee of the Medical Society of the State of Pennsylvania, presented a summary of the U. M. W. program, which was followed by a discussion participated in by representatives of the various states present. The general conclusions were "that the profession has a definite obligation and opportunity to serve the mining communities; that this principle is extendable to all industry; that, wherever it is evolved, it must be applicable as a community service and not be limited to relatively minor groups."

Organized Medicine's Relationship to the Various Cancer Drives.—Dr. E. J. McCormick, Toledo, Ohio, chairman of the Council on Medical Service of the A. M. A., acted as moderator. Dr. James R. Miller, Hartford, Conn., a member of the A. M. A. Board of Trustees and Chairman of the Service Division of the American Cancer Society, spoke briefly on the program of the American Cancer Society. Dr. Miller brought out the following fundamental principles:

1. Cancer is only one of the diseases which need a program.
2. The service program must be experimental.
3. The program must be on a professional level.
4. It must encourage the widest possible use of the regular physical examination.
5. It must assist and not compete with practitioners of medicine.
6. It must have the approval of the county medical societies.

Dr. James Crabtree, Washington, D. C., Deputy Surgeon General, U. S. P. H. S., outlined the work of the Public Health Service in the field of cancer control. Dr. Crabtree gave the main problems as:

1. Shortage of trained personnel.
2. Lack of physical facilities for research.
3. Lack of a long term policy by both governmental and private agencies.

State reports and points of view were given by Drs. Aranow, Bauckus, Borzell, Clair, Hines and Pendergrass. Summarizing this round table, the conference seemed fairly much in agreement on the following points of view:

1. Screening examinations have no place in a state program. It is a job for the general practitioner.
2. Screening examinations in detection clinics should be supported as an experimental approach.
3. There is need for editing the publicity used in fund raising drives to make it acceptable and accurate.
4. The profession and the public need educating.
5. More facilities for the care of incurable cases are needed.

Hill-Burton Hospital Construction Act.—The present status of the Hospital Construction Act was discussed by Dr. James Crabtree and Dr. Frederic J. Quigley. It was brought out that all but one of the fifty-two states and territories have designated an agency to carry out the required survey. One of the serious problems which seems to be facing state agencies is the determining of priorities, and from the discussion it seemed evident that it will be difficult to get facilities into those areas which need them most. The act was criticized in that it imposed a five year limit and in that it requires reasonable assurance for maintenance of facilities without also providing a continuing aid through the states where the need was demonstrated. These deficiencies are not correctable at the administrative level and can be altered only by amendments to the act itself.

Taft-Smith-Ball-Donnell Bill.—Mr. J. W. Holloway Jr., Director of the A. M. A. Bureau of Legal Medicine and Legislation, reported on the Taft bill S. 545. Several deficiencies in the bill were pointed out during the discussion. Among these are that:

1. The several states should each be allowed to designate the administrative agency preferred and not be limited to "providing that on or before 1949 such agency shall be the State health agency" (sec 712 [a] [1]).
2. It is inconsistent with parts 2, 3 and 4 of the American Medical Association's Ten Point Program, which provides for the use of tax funds only when need can be shown.
3. There is no guaranty of freedom of choice of physician in the bill.

Veterans Administration Medical Policy.—Dr. James C. Harding, assistant medical director for auxiliary services of the Veterans Administration, spoke on the Home Town Medical Care Program, stating that, while there is no change in the overall policy of the Veterans Administration, certain conditions have required administrative changes. Among such changes are:

1. Uniform fee schedule format, which, while actually a maximum set of fees, may be deviated from if "cause" is shown.
2. Certification by physicians in some states to the effect that the fees charged are not higher than those charged nonveteran patients.
3. A limitation of $6,000 annually wherever doctors are paid on a fee basis. A limitation on free choice of physician and examination to determine service connected pension rating.

Much discussion followed Dr. Harding's presentation and was participated in by all representatives present. The discussion brought out differences of opinion concerning Dr. Harding's statements, particularly with reference to the fact that the philosophy of the Washington office of the Veterans Administration has not permeated the regional offices. The representatives of the states all seemed to be of the opinion that there has been a gradual withdrawal of free choice of physician under the Home

Town Medical Care Program and that the Veterans Administration is attempting to change the original agreements

The conference voted unanimously to bring its deliberations to the attention of the House of Delegates of the American Medical Association through a report to the Council on Medical Service prepared by Dr George S Klump, representative of the Board of Trustees of the Medical Society of the State of Pennsylvania

Washington Letter

(From a Special Correspondent)

July 9, 1947

Six Agencies Accused of Using Health Workshops as Propaganda

The Subcommittee on Publicity and Propaganda, in an interim report approved by its parent group, the House Committee on Expenditures in Executive Departments, has accused six federal agencies of using government funds improperly for propaganda activities in planning and conducting "health workshops" to support pending legislation Chairman Forest A Harness Republican of Indiana requested the attorney general to initiate proceedings to halt the use of public funds in this manner Named in the report as having been 'known to have participated in this campaign" are the U S Public Health Service, Children's Bureau, Office of Education, U S Employment Service, Department of Agriculture and Bureau of Research and Statistics of the Social Security Board The committee charged that key personnel in these agencies planned to set up the workshops in strategic areas to influence farm and labor leaders to "build up an artificial, federally stimulated public demand on Congress for enactment of the Wagner-Murray-Dingell bill *providing compulsory health insurance* ' Workshops were reported to have been held in St Paul and at Jameston, N D

Survey Reports on Causes of Nurse Shortage

The Bureau of Labor Statistics of the Department of Labor reports that most nurses who leave the profession do so to marry rather than to take other jobs This was based on a study made by the agency with the National Nursing Council and the Women's Bureau of the Department Ewan Clague, commissioner of labor statistics, says "The present nursing shortage is apparently primarily due to increased demands for nursing service at a time when many married nurses are leaving their profession, and many potential nursing students find other fields of employment more attractive"

Officers Named to Silver Spring Laboratory

Dr L R Hafstad, director of Research of Johns Hopkins University's Applied Physics Laboratory at Silver Spring, Md, has been appointed secretary of the Joint Research and Development Board, succeeding Lloyd V Berkner, who resigned to devote full time to research Dr Isaiah Bowman, president of Johns Hopkins, also announced the appointment of Dr Ralph E Gibson as acting director Dr Hafstad won the 1946 President's Medal for Merit, awarded for wartime service in development of ordnance devices for the Army and Navy

Senate Group Approves Joining World Health Organization

The Senate Foreign Relations Committee has approved legislation providing for American participation in the World Health Organization which would establish world health and drug standards, set up sanitary requirements and create uniform drug advertising and labeling The committee reserved the right for the United States to withdraw on ninety days' notice American financial support would be about 2 million dollars a year

Government Discontinues Giving Amputees Free Automobiles

The government has discontinued its program of giving free automobiles to amputee war veterans The Veterans Administration's last accounting revealed that 13,000 veterans have received automobiles, and applications of several thousand others had been approved

Medical Legislation

MEDICAL BILLS IN CONGRESS

Department of Health, Education and Security

The Senate Committee on Expenditures in the Executive Departments has favorably reported S 140 with an amendment, proposing to establish a federal Department of Health, Education and Security The reported bill proposes to create in the department three bureaus, a Bureau of Health, a Bureau of Education and a Bureau of Public Welfare, each to be headed by an undersecretary The qualifications to be possessed by these undersecretaries are not specified in the bill as reported To the Bureau of Health will be transferred the United States Public Health Service the Food and Drug Administration, Freedman's Hospital and St Elizabeths Hospital To the Bureau of Education will be transferred the United States Office of Education, Howard University, the American Printing House for the Blind and the Columbia Institution for the Deaf To the Bureau of Public Welfare will be transferred the functions of the Social Security Administration including the Children's Bureau The Secretary of the Department and the undersecretaries are to be appointed by the President, subject to the approval of the Senate

Postgraduate Schools of Public Health

A bill introduced by Senator Taft, Ohio as S 1455 proposes to amend the Public Health Service Act to provide grants to postgraduate schools of public health For each fiscal year there will be authorized to be appropriated a sum sufficient to enable the Surgeon General of the United States Public Health Service, through grants to postgraduate schools of public health to assist in improving the training available in the field of public health and in increasing the number of individuals adequately trained in such field There will also be authorized to be appropriated from time to time such sums as may be necessary to enable the Surgeon General to make grants for the construction of buildings and other facilities necessary to carry out the purposes of the legislation

National Heart Disease Act

A bill introduced by Representative Javits New York, as H R 3762, provides for the establishing in the Public Health Service a division of the National Institute of Health to be known as the National Heart Disease Institute in which researches, investigations, experiments and demonstrations relating to the cause, prevention and methods of diagnosis and treatment of the diseases of the heart and circulation will be conducted Provision is contained in the bill, too, for grants in aid to the states, counties health districts and other political subdivisions of the states for the establishment and maintenance of programs for prevention, treatment and control of heart diseases including the provision of appropriate facilities for care and treatment and including the training of personnel for state and local health work There will be a National Heart Disease Council to consist of the Surgeon General of the Public Health Service or his representative the chief medical officer of the Veterans Administration or his representative, the Surgeon General of the Army or his representative, the Surgeon General of the Navy or his representative, and twelve members appointed by the Surgeon General with the approval of the Federal Security Administrator

Cancer Research

A bill making appropriations for the Executive Office and sundry independent executive bureaus boards commissions and offices for the fiscal year ending June 30 1948 H R 3839, in making an appropriation for the Atomic Energy Commission earmarks a sum not to exceed $25,000 000 to be available for research work in connection with the control of cancer

Admission to Public Health Service Hospitals

H R 3784 introduced by Representative Chapman Kentucky proposes to authorize the United States Public Health Service to admit to its hospitals persons committed by state courts who are beneficiaries of the service or who are narcotic addicts

Miscellaneous

A bill introduced by Representative Blackney, Michigan as H R 3831 has been favorably reported to the House of Representatives proposing additional inducements to physicians, surgeons and dentists to make a career of the United States military, naval and Public Health services A similar bill has been introduced in the Senate by Senator Pepper, Florida, as S 1511

Senator Langer, North Dakota has introduced S 1428, proposing to amend the United States Employees Compensation Act so as to permit chiropractors to treat the beneficiaries of that act

A bill introduced by Representative Howell, Illinois, as H R 3150 has been reported to the House of Representatives without amendment, proposing to amend the Railroad Unemployment Insurance Act by eliminating the provisions in it relating to cash sickness and maternity benefits which were added by the so called Crosser Act enacted by the Seventy-Ninth Congress

Coming Medical Meetings

Alaska Territorial Medical Association, Fairbanks, July 28 30 Dr William J Blanton, Juneau, Secretary

Bureau of Information

LOCATION OF PHYSICIANS

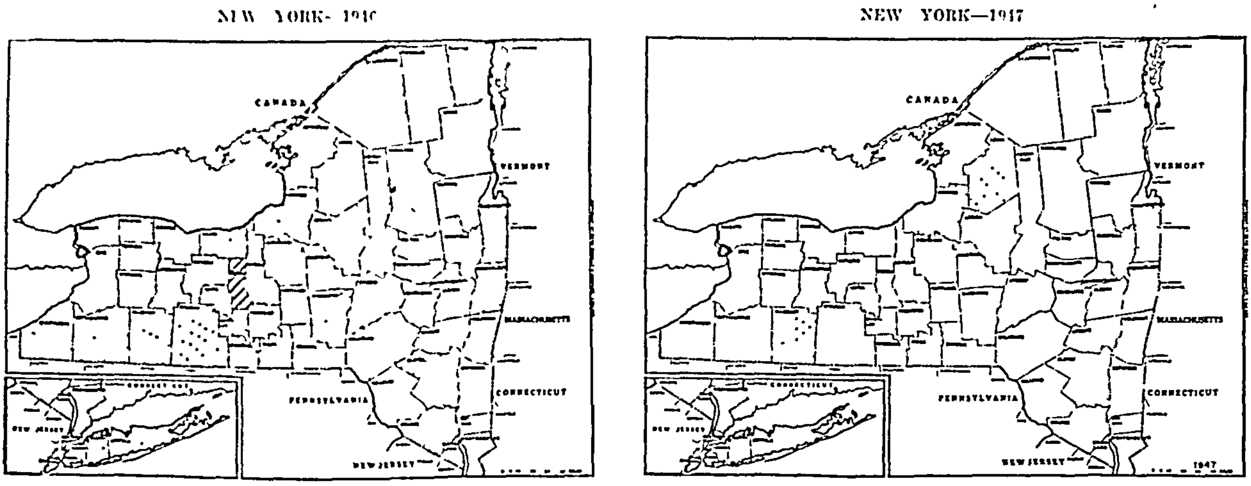
Virginia Shuler
Chicago

This is the fourth of a series of charts showing the trend in locations of physicians from April 1946 to January 1947, the first series appeared May 17, the second May 31 and the third June 14.

The Commonwealth Fund through its Division of Rural Hospitals has been developing a plan in the Rochester, N. Y., region to bring together in close affiliation the hospitals located in the area and in Rochester.

The essence of the plan is to determine whether "concerted voluntary action by the hospitals through representative organization on a regional scale" will help significantly in bringing about further progress in rural medicine. The premises for such a plan are twofold: that isolated hospitals in small towns need long-continued aid and counsel from outside sources if they are to rise to the full measure of their opportunities, and, second, that the natural sources from which such aid and counsel should come are the urban hospitals. The proposed region is designed to link a geographically coherent group of small hospitals with the large hospitals in an accessible center.

The experience gained in this regional health experiment is intended to serve as a pattern for other areas in the country. It is entirely a voluntary effort of the regional hospitals to build a more coherent medical and nursing program dependent on the individual participation of the physicians in the area.

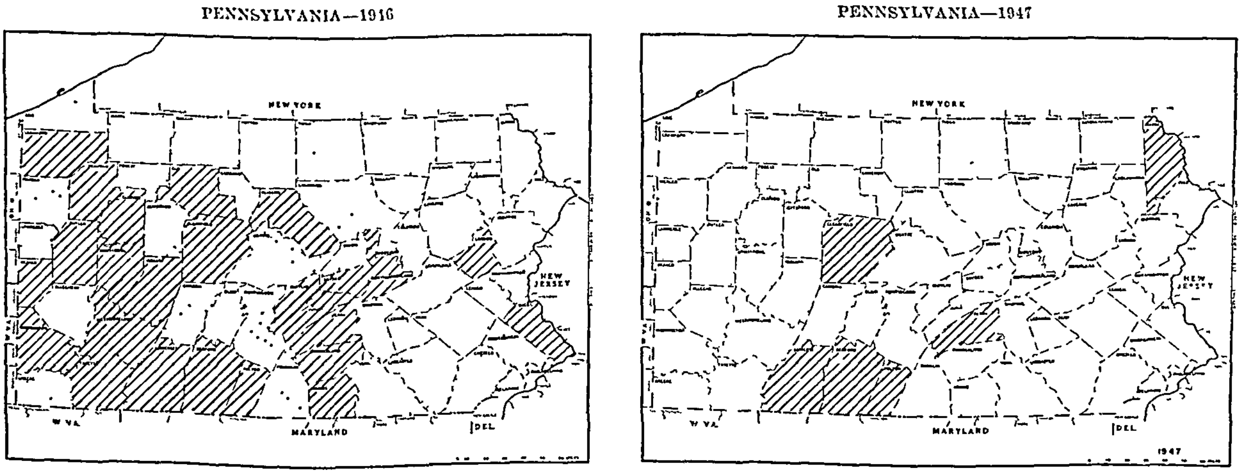

NEW YORK—1946
NEW YORK—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.
Key: Physician population ratio by county plain area 1 999, dotted area 1,000 1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor.

Areas in New York Requesting General Practitioners

County	Town	Population	County	Town	Population
Allegany		39,681	Lewis	Lyons Falls	818
Chenango		36,454	Otsego		46,082
Clinton	West Chazy	350	Seneca		25,732
Delaware		40,980	Sullivan		37,901
Essex		31,178	Washington		46,726

W. P. Anderton, M.D., Secretary,
Medical Society of the State of New York,
292 Madison Avenue, New York 17.


PENNSYLVANIA—1946
PENNSYLVANIA—1947

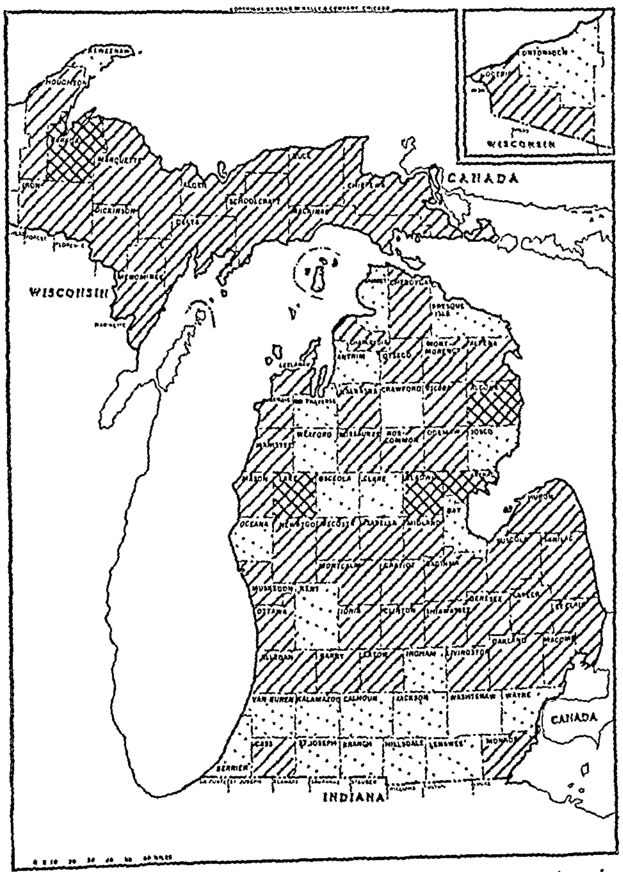
Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.
Key: Physician population ratio by county plain area 1 999, dotted area 1,000 1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor

Areas in Pennsylvania Requesting General Practitioners

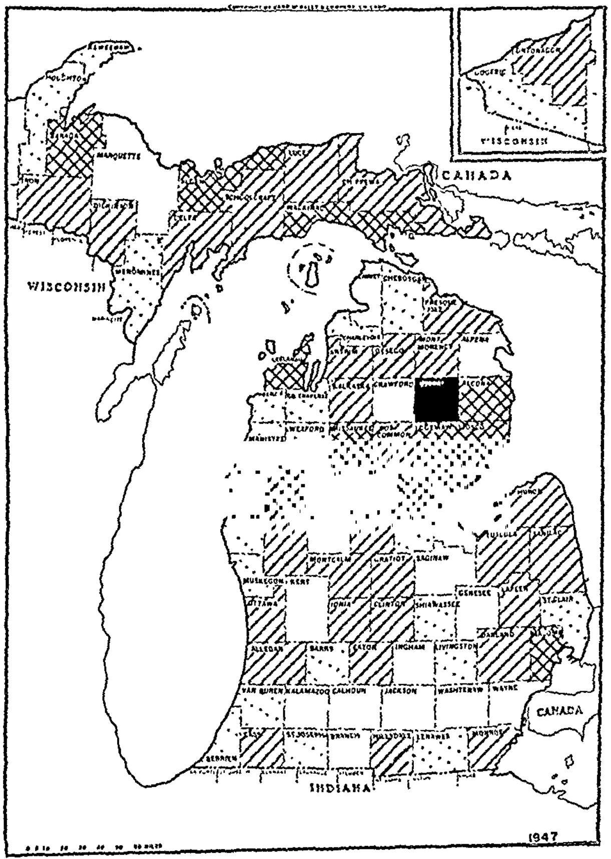
County	Town	Population
Allegheny	Benton	300
	Bridgeville	4,459
	Forest Hills	5,240
	Tarentum	9,816
Armstrong	Rural Valley	900
		891
Berks		575
Bradford		250
	Wyalusing	706
Butler	Millerstown	987
Cambria	Ashville	511
	Cresson	2,500
	Gallitzin	3,618
Cantre	Snow Shoe	578
Clarion	Clarion	3,798
	Shippenville	517
Columbia	Benton	786
	Millville	761
Franklin	Dry Rum	200
	Orrstown	294
Elk	Ridgeway	6,253
Greene	Bobtown	1,821
		2,491
Indiana		1,000
		439
	Smicksburg	223
Jefferson	Summerville	1,009
	Timblin	454
Juniata	Academia	150
	E. Waterford	135
	McCoysville	100
	Mifflin	860
Lycoming	Montoursville	3,000
McKean	Mount Jewett	350
Mercer	Grove City	6,296
Mifflin	McVeyton	581
	Milroy	1,510
Potter	Austin	1,050
	Coudersport	3,197
	Ulysses	488
Susquehanna	Hop Bottom	375
Venango	Dempseytown	156
	Emlenton	986
Washington	Fredericktown	2,500
Westmoreland	Expert	1,999
	Manor	1,289
	Murraysville	849
	West Newton	2,765
Wyoming	Laceyville	491
York	Airville	95
	East Prospect	419

W. F. Donaldson, M.D., Secretary,
Medical Society of the State of Pennsylvania,
500 Penn Avenue, Pittsburgh.

MICHIGAN—1946



MICHIGAN—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

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Areas in Michigan Requesting General Practitioners

County	Town	Population
Alcona	Lincoln	295
Allegan	Overisel	200
	Pullman	200
Alpena	Lachine	100
Antrim	Ellsworth	347
	Mancelona	1,173
Baraga	....	9,356
	Baraga	1,110
Barry	Freeport	405
Benzie	....	7,800
	Elberta	617
	Thompsonville	324
Berrien	....	89,117
	Riverside	75
	Stevensville	382
Branch	....	25,845
Calhoun	Bedford	300
	Tekonsha	636
Cass	Jones	200
Charlevoix	East Jordan	1,725
Cheboygan	Indian River	300
	Topinabee	121
Chippewa	Barbeau	100
	Trout Lake	260

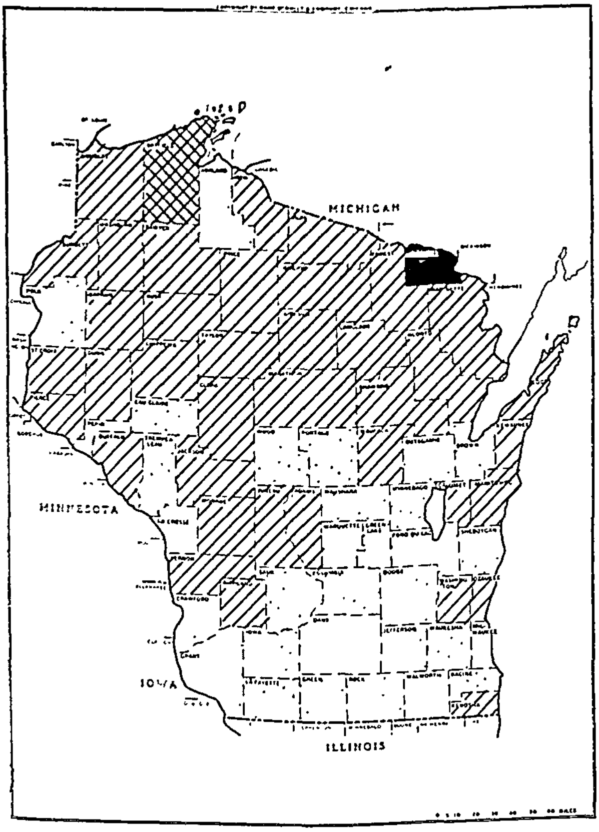
Areas in Michigan Requesting General Practitioners—Continued

County	Town	Population
Delta	Rapid River	654
Dickinson	Channing	683
Eaton		31,124
Emmet	Alanson	330
	Levering	200
Genessee	Montrose	675
Gogebic	Bessemer	4,080
	Marenisco	860
	Watersmeet	537
Gratiot	Bannister	262
	Middleton	450
Hillsdale	Cambria	200
	Waldron	424
Houghton	Sidnaw	300
Huron	Elkton	529
Iosco		8,560
Ingham	Danville	351
	Webberville	505
Ionia	Belding	4,200
	Clarksville	300
Iron	Alpha	497
Isabella	Rosebush	400
	Weidman	250
Jackson	Rives Junction	200
Kent	Ada	450
Lake	Chase	167
	Luther	343
Leelanau	Cedar	265
	Northport	608
Lenawee	Clayton	375
Luce	Newberry	2,732
Mackinac	Cedarville	400
Manistee	Onekama	310
Marquette	Gwinn	918
Mason	Custer	237
Mecosta	Barryton	342
Menominee		24,883
Midland	Sanford	250
Missaukee	McBain	459
Monroe	Maybee	390
	Monroe	18,478
Montcalm	Crystal	400
	Vickeryville	65
Montmorency	Lewiston	150
Muskegon	Casnovia	289
Newaygo		19,286
Ogemaw	Rose City	355
Ontonagon		11,159
	Trout Creek	600
Oscoda	Fairview	150
	Luzerne	43
Ottawa	Allendale	200
Roscommon	The Heights	100
St. Clair	Gardendale	50
St. Joseph	Mottville	75
Saginaw	Alicia	90
	St. Charles	1,300
Sanilac	Carsonville	433
	Peck	381
Schoolcraft		9,524
	Germfask	250
Shiawassee	Bancroft	581
	Henderson	250
	Perry	879
Tuscola	Fairgrove	481
	Gagetown	354
Van Buren	Breedsville	184
	Covert	600
	Decatur	1,000
Washtenaw		80,810

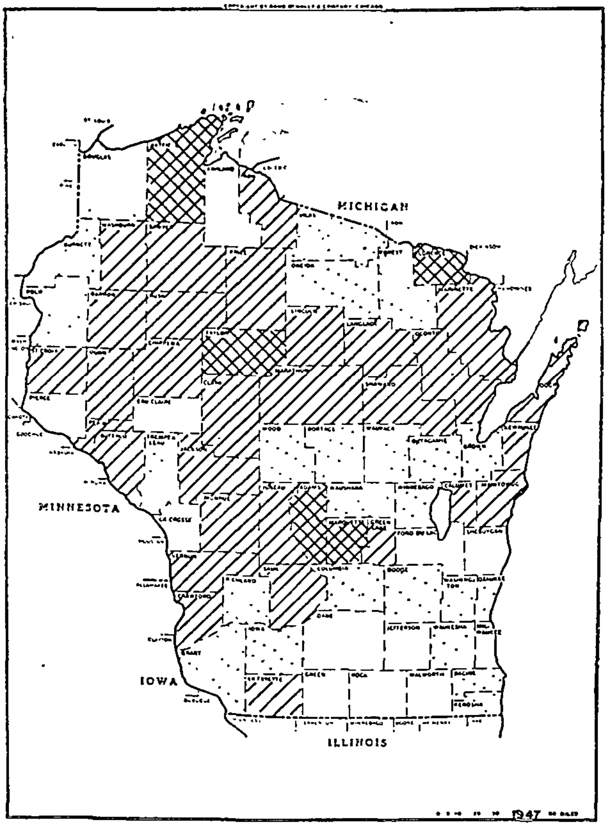
"Today Michigan practitioners total approximately 5,150 but on the basis of one doctor of medicine per 850 people, Michigan needs 1,200 more practitioners. During the past twelve to eighteen months Michigan physicians returned from military service and relieved the critical situation to some extent; also some new physicians have located in various spots in Michigan through the aid of the Placement Bureau of the Michigan State Medical Society. However, it would appear that the shortage of doctors of medicine will continue until those young physicians who are still in military service are released for civilian practice."

Mr. William J. Burns, Executive Secretary,
Michigan State Medical Society,
?020 Olds Tower, Lansing.

WISCONSIN—1946



WISCONSIN—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

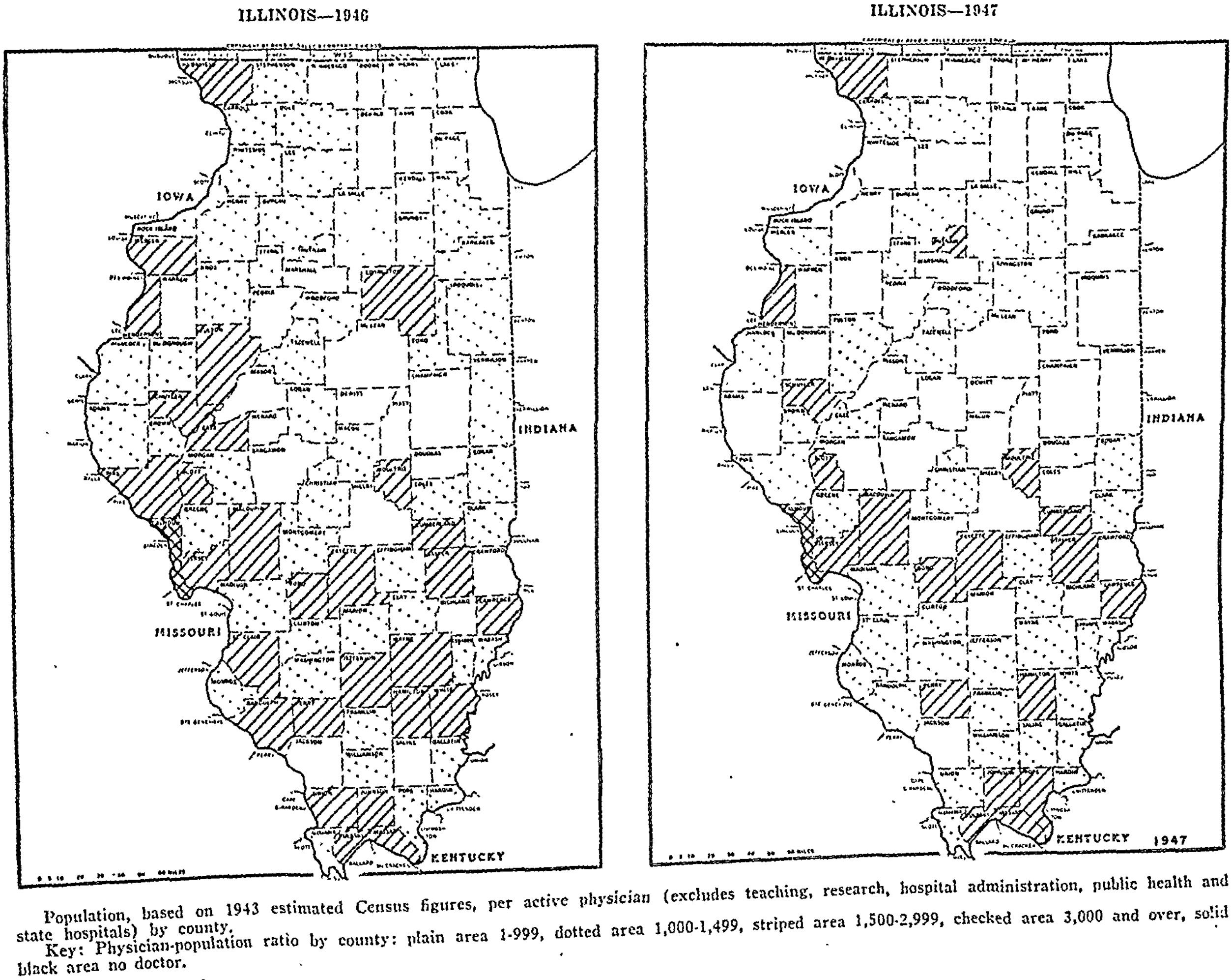
Areas in Wisconsin Requesting General Practitioners

County	Town	Population
Barron	Barron	2,100
Clark	Owen	1,200
Columbia	Fall River	400
Crawford	Gays Mills	737
	Seneca	300
	Wauzeka	513
Dane	Marshall	475
Douglas		47,119
Fond du Lac	Ripon	4,566
	Waupon	6,798
Green	Monticello	716
Iowa	Highland	902
Jackson	Taylor	314
Kewaunee	Luxemberg	468
Lafayette		18,695
	Shullsburg	1,297
Manitowoc	Reedsville	729
	St. Nazianz	485
Marathon		75,915
Marquette	Montello	1,100
	Neshkoro	301
	Oxford	404
Monroe	Cashton	706
	Tomah	3,000
Oconto		27,075
Ozaukee	Grafton	1,150
Pepin	Durand	2,000
Pierce	Spring Valley	973
Polk	Luck	800
Portage		35,800
	Almond	500
Richland	Lone Rock	502
Rock	Orfurdville	510
Sauk	Ableman	400
	La Valle	500
Sheboygan		76,221
Trempealeau	Blair	856
Vernon	DeSoto	400
	Hillsboro	1,146
Vilas		8,894
Washburn	Birchwood	531
Washington		28,430
	Jackson	302
Waushara	Hancock	500
	Plainfield	571

"There has undoubtedly been some tendency in Wisconsin for the concentration of physicians to shift from the rural to urban areas. The study conducted for the last eight months of 1946 shows fifteen rural counties with fewer physicians than at the start of the period studied.

"But it is important to appreciate that the postwar shifting and relocation of physicians in Wisconsin is not as yet completed. Many are in temporary locations while their plans are 'jelled.' Others are doing refresher work. Some are delaying permanent plans until the housing situation is eased. The State Board of Health has conducted a preliminary study of rural health conditions in the state as a whole which indicates no significant shortcoming in the health of rural people as compared with urban. Further studies will be made of specific areas, and legislation is being considered which will permit the appointment of special medical officers in the more difficult areas, it being hoped that physicians holding these appointments will retain their locations as their practice develops. The State Medical Society and county societies are making available complete information to physicians interested in Wisconsin locations. The State Board of Medical Examiners is meeting more frequently than required by law to assure prompt action on applications for Wisconsin licensure."

Mr. C. H. Crownhart, Secretary,
The State Medical Society of Wisconsin,
917 Tenney Building, Madison 3.


ILLINOIS—1946

ILLINOIS—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Illinois Requesting General Practitioners

County	Town	Population
Bond		14,540
	Donnellson	250
	Keyesport	617
	Pocahontas	750
	Sorento	840
Bureau	Manlius	319
Calhoun	Kampsville	432
Cass	Chandlerville	875
Christian	Assumption	1,561
	Edinburg	919
	Kincaid	1,749
	Morrisonville	1,206
	Mount Auburn	471
	Owaneco	266
	Palmer	326
	Pana	5,966
	Taylorville	8,313
Clark		18,842
	Casey	2,513
	Martinsville	1,296
	Westfield	678
Cook	Glenview	...
	Palatine	2,222
	Park Ridge	12,063
Crawford		21,294
	Robinson	4,311
Cumberland	Neoga	1,062
DeWitt		18,244
	Clinton	6,331
	DeWitt	247
	Farmer City	1,833
	Kenney	483
	Wapella	496
	Waynesville	504
Douglas	Arthur	1,405
Ford	Roberts	379
	Sibley	374
Franklin	Thompsonville	560
	West Frankfort	12,383
Fulton		44,627
	Astoria	1,292
	Lewistown	2,355
	Vermont	945
Greene	Greenfield	1,006
Hamilton	McLeansboro	2,528
Hancock		20,297
	Augusta	1,000
	Carthage	2,575
	Dallas City	1,100
	Hamilton	1,642
	Nauvoo	1,030
	Pasco	200
	Warsaw	1,895
	West Point	250
Hamilton	Dahlgren	505
Hardin	Cave In Rock	486
JoDaviess		19,989
	Galena	4,126
Johnson	Goreville	508
	Vienna	1,173
Kane	Maple Park	398
Kendall	Newark	425
LaSalle	Dana	253
Lawrence	Sumner	1,070
Logan		29,438
	Atlanta	1,300
Macon	Macon	1,000
Macoupin		46,304
	Bunker Hill	1,052
	Palmyra	824
Madison	Alhambra	375
	Glen Carbon	1,091
	Marine	557
Marion	Hoyleton	401
	Sandoval	1,796
Mason	Forest City	240
	Mason City	1,984
McDonough		26,944
	Industry	576
	Prairie City	574
McLean	Danvers	705
	Gridley	745
	McLean	652
	Stanford	482
Menard	Athens	1,062
	Greenview	749
	Tallula	604
Mercer	Keithsburg	1,130
	New Windsor	517
	Viola	743
Monroe	Mecker	205
	Valmeyer	591
Morgan		30,378
Perry	Tamaroa	951
Pike		25,340
	New Canton	500
	Pearl	539
	Perry	456
Pulaski	Grand Chain	306
	Mound City	2,465
	Olmsted	593
Randolph	Prairie Du Rocher	576
Rock Island	Hillsdale	250
St. Clair	New Athens	1,355
Scott	Alsey	290
	Winchester	1,651
Shelby	Findlay	688
	Moweaqua	1,500
Union		...
Vermilion	Ridge Farm	890
	Westville	3,446
Washington	Okawville	708
White	Springerton	301
Will	Monee	427
Williamson	Carterville	2,893
	Creal Springs	950
	Johnson City	5,418
	Pittsburg	817
Woodford	Benson	350
	Minonk	1,897

"The medical situation throughout Illinois has shown a marked improvement during the past year, and this situation is especially conspicuous in the larger cities. As a matter of fact, there are very few cities of more than 5,000 population that do not have more physicians at the present time than before the outbreak of World War II. Although quite a large number of veteran-physicians have located in the small towns that can support only one or two physicians, there are still several very desirable locations available, and the office of the secretary of this society endeavors to retain accurate information to be submitted to physicians who write for these data. Some of these towns are not conveniently located to hospitals and we are experiencing some difficulty in finding physicians willing to locate in them. Quite a large number of Illinois physicians are taking residencies following their release from military service and intend to specialize rather than returning to general practice. The secretary's office has noted an urgent need for eye, ear, nose and throat specialists throughout the downstate area."

HAROLD M. CAMP, M.D., Secretary,
The Illinois State Medical Society,
Monmouth, Ill.

GOVERNMENT SERVICES

ARMY

THE 110TH STATION HOSPITAL IN VIENNA

This U. S. Army hospital, now located in the former "Kaufmaennische Spital" in Vienna, is providing medical care for about 4,200 military personnel, 1,200 dependents and 800 War Department civilians, patients flown in from American delegations in eastern European countries and authorized members of Allied nations. In addition, during the last year there were 26,000 outpatient treatments, 53 deliveries and 15,000 sittings in the dental clinic.

Owing to its proximity to a famous medical school, this hospital has served as host to medical officers attending graduate courses at Vienna University through arrangements made by the chief surgeon of the European command (The Journal, June 21, p. 719). While the hospital buildings were badly damaged during the war, practically every section has been reconstructed to meet the required high standards of medical care.

The 110th Station Hospital was activated at Camp Pickett, Virginia, in 1942, served in England and Scotland, landed in France in 1945, and later was assigned to occupation duty with the U. S. Forces in Austria. While it operated with the capacity of up to 800 beds during the war, the number of beds now has been reduced to 150. The present commanding officer is Lieut. Col. C. W. Sargent, M. C.

HEALTH IN JAPAN

During March in Japan the incidence of typhus, bacillary dysentery and relapsing fever all decreased. However, typhoid increased from 659 cases in February to 1,409 in March, the highest incidence, 580, having been in the province of Kyongsang-Pukto.

A conference was held March 20-21 in Seoul in which provincial veterinary officers discussed the sanitation of fish markets, slaughterhouses and dairy plants, also the prevention and treatment of animal diseases.

A central committee of fifteen members was chosen at a meeting in Seoul, March 15-16, to work on reviving the Korean Red Cross.

ARMY AWARDS AND COMMENDATIONS

Major General M. C. Stayer

The Legion of Merit has been awarded to Major Gen. M. C. Stayer, M. C., U. S. Army (retired), now of Harrisburg, Pa., for performing exceptionally meritorious service from July 1945 to April 1946 as director of the public health and welfare division, United States Group Control Council (Germany) and chief of the Public Health and Welfare Branch, Internal Affairs and Communications Division, Office of Military Government for Germany (U. S.). General Stayer, states the citation, was responsible for planning, directing and supervising the reorganization of the German medical system, public welfare program, education and religious affairs for the American Zone of Occupation and for negotiating on a quadripartite basis necessary matters pertaining to the whole of Germany. Through his untiring efforts, perseverance and energy General Stayer so successfully accomplished his mission that typhus was practically wiped out of the American Zone, typhoid and other epidemics were averted and his prompt and effective program was of inestimable value in averting situations which might have jeopardized the entire occupation plans. Dr. Stayer graduated from Jefferson Medical College in 1906 and entered the military service in 1909.

Brigadier General Robert C. McDonald

The Legion of Merit has been awarded to Brig. Gen. Robert C. McDonald, M. C., U. S. Army (retired), of Washington, D. C., who displayed exceptionally meritorious conduct in the performance of outstanding services as surgeon, Fourth Service Command, from July 1944 to October 1945. With unusual judgment, foresight and careful planning he accomplished a program of expansion which provided the best of medical attention for many sick and wounded. He effected a reorganization to achieve better supervision of the extensive facilities of the command and guided an efficient program which made the Welch Convalescent Hospital at Daytona Beach, Fla., a model institution. Through his high professional attainments and inspiring devotion to his important tasks General McDonald contributed substantially to the success of American military medicine. Dr. McDonald graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1909 and entered the military service in February 1911.

Colonel Gustave E. Ledfors

The Legion of Merit has been awarded to Col. Gustave E. Ledfors, M. C., U. S. Army, who as chief of the supply division, Office of Air Surgeon, from October 1942 to January 1945 solved the vital problem of determining the medical supply requirements of the Air Forces, working untiringly to develop and standardize medical equipment peculiar to the Army Air Forces. He made striking reductions in cubage and weight of medical items to save air transport space and effected important economies in materials and parts. Through constant liaison with military, governmental, technical and professional organizations he was able to obtain release on surpluses which were needed by his command and to make short cuts, improvisations and substitutions which insured adequate amounts of the scarcest supplies. He presented requirements for medical field items on a new basis of aircraft production and aircrew members instead of the old troop strength basis and saw his estimates substantiated by later developments. He was largely responsible for the exceptionally fine record of medical supply throughout the far flung installations of the Army Air Forces. He also has been awarded the Bronze Star. Dr. Ledfors graduated from the University of Minnesota Medical School in 1930 and entered the military service in July 1929.

Lieutenant Colonel Clarence S. Livingood

The Legion of Merit has been awarded to Lieut. Col. Clarence H. Livingood, M. C., A. U. S., of Philadelphia, whose contribution to military medicine was made while he was consultant in dermatology, Office of the Surgeon General, during the period March to December 1945. As the citation accompanying the award explains, he was responsible for the practical application of methods of diagnosis and treatment of skin diseases in the Zone of the Interior, thereby insuring that the large number of soldiers with these serious and often intractable diseases received the best possible care their country could offer. Dr. Livingood graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1936 and entered military service Feb. 15, 1941.

Major John H. Dingle

The Legion of Merit has been awarded to Major John H. Dingle, M. C., A. U. S., of Cleveland. The citation read in part as follows: As director of the Commission on Acute Respiratory Diseases, Army Epidemiological Board, and its laboratory from May 1944 to October 1945 he rendered exceptionally meritorious service. Profiting by training and experience as a consultant to the Secretary of War and member of the Commission on Influenza, he contributed the results of his investigations to the Commission on Acute Respiratory Diseases, which under his leadership established the causative agent of atypical pneumonia as being a filtrable virus and added greatly to the current store of knowledge of the common cold, influenza, hemolytic streptococcic infections and other respiratory diseases of importance to the Army. Throughout the entire period of his service Major Dingle was repeatedly called on by the Surgeon General for assistance in the investigation of unusual outbreaks of respiratory disease in the United States and in overseas theaters. Dr. Dingle graduated from Harvard Medical School in 1939 and entered military service in May 1944

Captain Henry M. Lemon

The United States of America Typhus Commission Medal has been awarded to Capt. Henry M. Lemon, M. C., A. U. S., of Quincy, Mass. The citation read as follows: "He rendered meritorious service in connection with the work of the United States of America Typhus Commission in the control and prevention of epidemic typhus fever in the American-occupied areas of Germany and Austria during the period Nov. 4, 1945 to April 9, 1946. He participated in formulation of the program and in carrying out control measures, contributing directly to the safeguarding of American troops as well as civilian populations from outbreaks of typhus fever." Captain Lemon, who was also awarded the Army Commendation Ribbon, graduated from Harvard Medical School in 1940 and entered the military service in 1943.

Captain Glen V. Ryan

The United States of America Typhus Commission Medal has been awarded to Capt. Glen V. Ryan, M. C., A. U. S., of Indianapolis. The citation read in part as follows: While attached to headquarters seventh Army from April to June 1945 he performed exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. As head of a provisional typhus case finding team Captain Ryan, through his enthusiasm and outstanding initiative, carried out an effective typhus control program in the seventh army area. Working long hours and covering great distances, he uncovered, diagnosed, hospitalized and treated hundreds of typhus cases, performing necessary control measures. At the Dachau concentration camp it was necessary to dust the entire 36,000 inmates as well as the living quarters, and this was accomplished in less than six days by his able and skilled direction. The effectiveness with which he carried out typhus control work is attested by the dramatic cessation of new cases at the end of the incubation period following the initial dusting. Dr. Ryan graduated from the University of Arkansas School of Medicine in 1933 and entered the military service in August 1942.

Captain Hyman B. Copleman

The Legion of Merit has been awarded to Capt. Hyman B. Copleman, M. C., A. U. S., of New Brunswick, N. J. The citation read as follows: "Captain Copleman performed outstanding services from July 28 to Aug. 28, 1944, while chief surgeon of the prisoner of war hospital for Allied personnel at Chalons sur Marne, France. He devoted every effort to providing an adequate surgical service for his fellow prisoners, and, while still a prisoner himself, made contact with advancing American troops to arrange the transfer of wounded personnel to their care." Dr. Copleman graduated from Rush Medical School, University of Chicago, in 1933 and entered the military service June 19, 1942. He has also been awarded the Silver Star with Oak Leaf Cluster, the Bronze Star and the Purple Heart with Oak Leaf Cluster.

VETERANS ADMINISTRATION

REHABILITATION OF SEVERELY INJURED VETERANS

In most of the 126 veterans' hospitals a program is under way to speed the rehabilitation of the severely injured by teaching them a variety of trades and arts. The program also embraces patients whose health requires repeated or continuous hospitalization for chronic conditions. In many cases the instruction will provide the veterans with an opportunity to contribute to their own livelihood after recovery. A group of 30 veterans completely paralyzed from the waist down have progressed so well in the watch making courses that they will continue training at a private school of watch making on Long Island. A group of 75 patients at another veterans' hospital is studying radio and broadcasting technics as a part of their rehabilitation. Several of them have already received amateur radio operating licenses. Among other courses that disabled veterans are taking are photography, automotive repair, engraving, electrical work, metal work, jewelry and agriculture. This type of rehabilitation is available to all patients with the approval of their physicians.

HOSPITAL NEWS

The 89 bed neuropsychiatric building for female veterans at the Bedford, Mass., Veterans Administration hospital has been opened.

Two minor changes in plans for certain veterans' hospitals in the South are (1) the substitution of a 100 bed general hospital in addition to the present hospital at Tuskegee, Ala., in place of a proposed 164 bed neuropsychiatric addition; the present hospital at Tuskegee has a standard capacity of 2,052 neuropsychiatric beds; (2) conversion of the 317 bed hospital for chronic diseases, Atlanta, Ga., to a 225 bed tuberculosis hospital pending completion of a proposed tuberculosis hospital at Americus, Ga. This conversion will be temporary, and on completion of the hospital in Americus the Atlanta hospital will revert to its former type of facility.

NEW SITE FOR BOSTON HOSPITAL

President Truman and the Federal Board of Hospitalization have approved the acquisition of a 9 acre site for a veterans' hospital in Boston, 3 miles from the city's business district, where a 1,000 bed general hospital will be constructed. This site, which is sufficiently close to Boston's three medical schools to assure the cooperation of local personnel as consultants, is being substituted for a previously approved site on Willow Pond Road in Boston.

VETERANS ADMINISTRATION EMPLOYEES

About 87 per cent, or 121,528 of its employees, are veterans, the Veterans Administration announced May 2; this compares with 61.5 per cent in December 1941. In the central office in Washington, 98 per cent of the male employees are veterans. Of the female employees of the Veterans Administration 14,414, or 17.2 per cent, are veterans, widows of deceased veterans or wives of disabled veterans. While in December 1941 only 11.8 per cent of the women employed were in this category, as of March 31 the Veterans Administration had a total of 223,174 employees and about 76,000 of them, or almost 35 per cent, were engaged in medical services to veterans.

CONTRACT AWARDED FOR ST. LOUIS HOSPITAL

The War Department announces that the architect-engineer contract for the 1,000 bed general medical and surgical veterans' hospital at St. Louis has been awarded to firms in that city and Chicago, and construction is expected to start within a year.

CRUTCHES

The Medical and Surgical Relief Committee donated in June, for the use of veterans, $175 worth of crutches and canes, which will be distributed by the orthopedic unit of the Veterans Administration, 252 Seventh Avenue, New York.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Pediatric Unit Opened.—White Memorial Hospital, Los Angeles, opened its $150,000 pediatric unit May 12. At the ceremony a check for $2,000 from the Los Angeles Elks Foundation, to furnish one of the wards in the unit in the main hospital building was accepted.

Scholarships in Chest Diseases.—The Alameda County Tuberculosis and Health Association has reestablished the scholarships for study of diseases of the chest. They are open to young physicians beginning private practice in Alameda County and the work is done in the chest clinics of the county under teaching supervision

Society News.—At a meeting of the Academy of Medicine, Hollywood, May 8, Dr. Herbert Acuff, Knoxville, Tenn., discussed "The Underlying Principles of the Management of Peptic Ulcer."——At a meeting of the Los Angeles Society of Internal Medicine June 4 Dr. Paul E. Steiner, associate professor of pathology, University of Chicago, spoke on "Human Carcinogens."

The Janeway Lecture.—Dr. Robert S. Stone, professor of radiology at the University of California Medical School, San Francisco, who was closely associated with atomic research during World War II, was selected to deliver the Janeway lecture at the meeting of the American Radium Society at Atlantic City. His lecture was entitled "Neutron Therapy and Specific Ionization." The lecture was established in 1933 in memory of Dr. Henry H. Janeway, attending surgeon to the Memorial Hospital, New York, where he established a physical laboratory and did pioneer work in the field of radium therapy. Dr. Janeway died Feb. 1, 1921.

CONNECTICUT

Distribute Cancer Bulletin.—The state medical society and the Connecticut Cancer Society are cooperating in the distribution of a bulletin concerning the medical aspects of cancer. The data included were prepared and published in recent months by the Committee on Cancer of the Illinois State Medical Society. Bound in a loose-leaf handbook, the bulletin is currently being distributed in limited numbers to members of the Connecticut society, for whom it may have the most immediate interest.

State Extends Public Health Program.—Connecticut has only thirteen full time local departments of health, serving about half of the population. They are mainly in large cities. It remains now for local boards of selectmen to vote affirmatively for such a department in rural areas. A new state law appropriating $25,000 for financing district health departments during 1947 to 1949 permits two or more towns, cities or boroughs to unite into a locally self-governing district department of health. The state may provide funds up to half the cost of operating such a department, but the total amount available annually to any one town, city or borough may not exceed $4,000, nor the total state aid to any district $20,000.

Commission to Improve Mental Hospitals.—Drs. Joseph H. Howard, Bridgeport, and Joseph I. Linde, New Haven, have been appointed by Governor James L. McConaughy to a commission to inaugurate a $7,000,000 improvement program for the state's mental institutions. Past president of the Connecticut State Medical Society, Dr. Howard is a member of the state commission on the care and treatment of the chronically ill, aged and infirm. He was recently named president-elect of the conference of presidents and other officers of state medical societies at the annual meeting of the organization in Atlantic City. Dr. Linde, president of the State Medical Society in 1940, is health officer for the city of New Haven and is a member of the State Tuberculosis Commission.

The Winslow Seminar Fund.—Professor Charles-Edward A. Winslow was honored at a recent dinner in New Haven by 150 faculty associates and graduates of the Yale department of public health, which he organized and served as its chairman for thirty years until 1945. He was presented with the first copy of the March 1947 *Yale Journal of Biology and Medicine*, which is devoted entirely to papers by his former students and colleagues as well as a bibliography of 574 titles of articles, reports and books written by Professor Winslow during the past fifty years. Highlight of the dinner was the announcement of the Winslow Public Health Seminar Fund, which will provide for prominent visiting lecturers and leaders of public health seminars.

GEORGIA

Dr. Richardson Named Chairman of Pharmacology Department.—Dr. Arthur P. Richardson, Memphis, Tenn., has accepted appointment as professor of pharmacology and chairman of the department at Emory University School of Medicine, Atlanta, effective July 1. Dr. Richardson has been associated with the Squibb Institute for Medical Research. He is a graduate of Stanford University School of Medicine, Stanford University-San Francisco, 1937, where he was assistant professor of pharmacology; later he was associate professor of pharmacology at the University of Tennessee College of Medicine, Memphis.

ILLINOIS

Study of Septic Tanks.—Suburban Cook County has been selected by the U. S. Public Health Service as one of three areas for a study of household septic tank disposal systems. Cook County was chosen as representative of the northern area of the country in the variety of tanks in operation and because of an organized source of records in the county health unit. The government hopes to develop standards whereby sludge capacity will be increased.

Chicago

Death of Mr. Halling.—Mr. Bliss O. Halling, acting director of the Bureau of Investigation at the headquarters of the American Medical Association, was found dead in his apartment July 2 of a heart attack. Mr. Halling was born in Iowa, Sept. 8, 1886. He was a veteran of World War I and had been on the staff of the Bureau of Investigation for about thirty years.

Society News.—At the annual meeting of the Chicago Gynecological Society June 20 Dr. Aaron E. Kanter became president, Dr. Herbert E. Schmitz president-elect and Dr. Edward M. Dorr secretary.——At the annual meeting of the Chicago Urological Society May 22 Dr. Irving J. Shapiro was elected president and Dr. James W. Merricks secretary-treasurer.——The Chicago Society of Internal Medicine at its meeting May 26 elected Dr. Henry T. Ricketts president and Dr. Ernest G. McEwen secretary-treasurer.

Dr. Hughes Heads Department of Ophthalmology.—Dr. William F. Hughes Jr., associate professor of ophthalmology, Indiana University School of Medicine, Bloomington-Indianapolis, has been named head of the department of ophthalmology at the University of Illinois College of Medicine, beginning July 2. Dr. Hughes graduated in medicine at Johns Hopkins University School of Medicine, Baltimore, in 1938, interned at Johns Hopkins Hospital and later served as assistant resident and resident ophthalmologist of the outpatient department. During the war he conducted research on treatment of chemical burns of the eye at Johns Hopkins University for the Office of Scientific Research and Development. He is a member of the American Academy of Ophthalmology and Otolaryngology and the Association for Research in Ophthalmology.

De Lee Professorship Established.—The Joseph Bolivar De Lee professorship of obstetrics has been established at the University of Chicago Medical School under an endowment fund set up by the Mothers' Aid of Chicago Lying-In Hospital and Dispensary, and Dr. M. Edward Davis, professor of obstetrics has been appointed to the chair. Dr. Davis, a graduate of Rush Medical College in 1923, became associated with Dr. De Lee as assistant resident of the hospital in 1925. He received the Gold Medal Award of the American Medical Association for studies in ergot in 1935, and the annual award of the Central Association of Obstetrics and Gynecologists in 1937 on the production of artificial ovulation. The De Lee professorship endowment is in honor of the founder of the Chicago Lying-In Hospital and Dispensary. Dr. De Lee first established a dispensary and home delivery service at Maxwell Street and Newberry Avenue in 1895.

LOUISIANA

State Medical Election.—At the annual meeting of the Louisiana State Medical Society in May Dr. Gilbert C. Anderson, New Orleans, became president and Dr. Marion D. Hargrove, Shreveport, president-elect; Dr. Paul T. Talbot was reelected secretary-treasurer for a five year term. The vice presidents are Dr. Philip H. Jones Jr., New Orleans, Arthur D. Long Jr., Baton Rouge, and Charles B. Odom, New Orleans. The next meeting of the society will be held in Monroe, La.

MICHIGAN

Faculty Honors Dr. Buesser.—A life size portrait of Dr. Frederick G. Buesser, professor of clinical medicine at Wayne University College of Medicine, Detroit, was presented to the university May 28 by the faculty. Dr. Buesser has been associated with the university for many years. The portrait will be placed in the auditorium of the medical school next to the portraits of Drs. William J. Stapleton Jr., Walter H. MacCracken, William A. Donald and Andrew P. Biddle.

Ragweed Pollen Count.—The seventh annual ragweed pollen survey will be conducted by the Michigan Department of Health beginning July 1 and continuing through September 15. Pollen counts for twenty-four hour periods from forty-eight places in the state will be furnished the public by newspapers and radio. Five areas, those surrounding Gaylord, Mackinaw City, Newberry, Rogers City and St. Ignace, had no ragweed pollen season last year, while Alpena, Charlevoix and Sault Ste. Marie had a one day season when the pollen counts exceeded 100 grains per cubic yard of air. The highest count came last year between August 26 and September 15. Grand Rapids had the longest season, twenty-seven days.

NEW YORK

Half of Centennial Fund for the Medical School.—One half of the centennial fund quota of $3,000,000 of the University of Buffalo will be used for the critical needs of the university's medical school—$500,000 for a new building and $1,000,000 for endowment. The medical dental building, to cost about $1,000,000, is 50 per cent financed by a gift from Mrs. Jessica Anthony Sherman and the bequest of Dr. DeWitt Halsey Sherman. The building is to house larger laboratories for instruction and research, an adequate library and medical museums. The endowment will be used principally for improvement and extension of teaching and research programs. Chairman of the medical division of the centennial fund campaign is Dr. William J. Orr, who is assisted by Drs. Matthew L. Carden, Henry N. Kenwell, John H. Talbott, Stuart L. Vaughan and Edward G. Winkler, all of Buffalo.

Personal.—At a drawing June 13 in Atlantic City Dr. Cyrus H. Maxwell, Albany, won the new Cadillac club coupe donated for the Centennial of the American Medical Association by White Laboratories, Inc., pharmaceutical manufacturers.——Dr. Irwin P. Sobel, associate pediatrician of Lenox Hill Hospital, has been appointed assistant clinical professor of pediatrics at the New York University College of Medicine. Dr. Sobel, a graduate of Columbia University College of Physicians and Surgeons, New York, served as lieutenant colonel in the medical corps during World War II.——Dr. George Draper, New York, has been appointed medical director of the Winifred Masterson Burke Relief Foundation convalescent home at White Plains, succeeding Dr. Lewis A. Conner. Dr. Draper, formerly associate professor of clinical medicine, Columbia University College of Physicians and Surgeons, has been engaged in special studies at the New York Hospital Cornell Medical Center.——Dr. Alfred J. Vignec has been appointed director of pediatrics at St. Vincent's Hospital, New York.

New York City

Child Health Center.—The department of health opened a child health center at the Manhattan Beach veterans' housing project June 25. It will serve about 1,100 families. The first of a series of nine similar centers, it will be staffed by a doctor and several nurses and will give health supervision and guidance on child growth and development of children from birth to 6 years of age.

Research on Cerebral Palsy.—A joint committee for research in problems of cerebral palsy has been established by the New York City, Bellevue and Presbyterian hospitals, the city health department, Cornell University Medical College, Columbia University College of Physicians and Surgeons and the New York University College of Medicine. Its purpose is to conduct research; intensify the development of diagnostic procedures and study the best way to organize, finance and operate clinics. Committee officers are Dr. Philip D. Wilson chairman and Dr. William Cooper secretary.

Rockefeller Institute to Consolidate Activities in New York City.—In view of the far reaching economic changes which have taken place in this country during the last two decades followed by the upheaval resulting from World War II, the trustees and scientific directors of the Rockefeller Institute for Medical Research are unanimous in the belief that the broad purposes for which the institute was founded can best be served and all phases of its activities strengthened by consolidating the institute's complete program on its York Avenue site in New York City. In spite of the increased cost of doing so, the prewar activities of the institute are to be resumed and continued in such a way as always to attract the best men by offering them the best conditions of work and the best facilities for it. The trustees at a meeting June 11 approved the integration in New York of the department of animal and plant pathology with the departments of the laboratories and the hospital, and authorized the necessary steps to be taken at the earliest practical date, but in no case later than July 1, 1951. The plan is to transfer to the New York plant all those activities of the institute at Princeton which can be transferred; then to make new arrangements for such other activities as may be continued. The president, John D. Rockefeller Jr., appointed a committee of four trustees to formulate and take the action required to carry out the purposes of the aforementioned resolution: Dr. Herbert S. Gasser, chairman, Mr. Barklie Henry and Mr. David Rockefeller with Lindsley F. Kimball, Ph.D., as an alternate to act in the absence of either Mr. Henry or Mr. Rockefeller.

OHIO

Fifteen New Research Contracts.—The Ohio State University Research Foundation announced the signing of contracts amounting to $428,171 for scientific studies to be conducted at the university for government agencies and industrial firms. James S. Owens, Ph.D., executive director of the foundation, reported that ten projects totaling $320,341 will be carried out for the Army Air Force, the Office of Naval Research, the Cleveland Ordnance District and the Army Engineer Board, Fort Belvoir, Virginia. Research contracts for five industrial firms total $107,830. Funds received by the research foundation go to pay the cost of the projects. The research foundation was incorporated in 1936 as a nonprofit organization to broaden the Ohio state research program and to correlate it with industrial and governmental interests. It not only supervises scientific investigations but it trains and develops personnel to further this work. Research covering a wide range of advanced developments is now being conducted in twenty-five departments of the university under contracts.

OKLAHOMA

Dr. Moorman Honored.—Dr. Lewis J. Moorman, Oklahoma City, one of the founders and for the last twenty-nine years president of the Oklahoma County Health Association, has been made "honorary president for life" of that organization. He assisted in the organization of the Oklahoma City Tuberculosis Society and was its first president in 1918. Since that time the society has expanded its activities and in 1939 became known as the Oklahoma County Tuberculosis and Health Association. Dr. Moorman is also editor of the *Journal of the Oklahoma State Medical Association*, served as dean of the University of Oklahoma School of Medicine 1931-1935 and is past president of the National Tuberculosis Association, the American Trudeau Society and the Southern Medical Association.

OREGON

Professor Livingston Returns to Oregon.—Dr. William K. Livingston, guest professor in the department of anatomy, New York University College of Medicine, New York, will become professor of surgery and head of the department at the University of Oregon Medical School, Portland, August 1. Dr. Livingston is a graduate of Harvard Medical School, Boston, 1920, and is a former member of the University of Oregon Medical School faculty. Prior to assuming his new position Dr. Livingston is to be a guest speaker at the Association of Surgeons of Great Britain and Ireland during its sessions in Oxford and will also deliver departmental lectures at Oxford University.

PENNSYLVANIA

Seventh Rheumatic Heart Clinic.—The seventh rheumatic heart clinic of the state health department was opened in April at Wilkes-Barre General Hospital with Dr. John F. Giering, Kingston, as director. No treatment will be given at the clinic, but patients registered will be diagnosed and recommendations for treatment will be sent to patients' physicians. Dr. Giering is a graduate of the University of Scranton and the Jefferson Medical College of Philadelphia. Other rheumatic heart clinics established by the state under the program of the 1945 general assembly are located in Erie, Harrisburg, Altoona, Williamsport, Allentown and Sayre.

Army Officer Appointed Director at Mont Alto.—Brigadier General Henry C. Dooling, U. S. Army, Retired, has been appointed medical director of the Pennsylvania State Sanatorium No. 1 (Mont Alto), South Mountain. A graduate of Medico-Chirurgical College of Philadelphia, 1908, Dr. Dooling practiced medicine in Norwood for seven years before entering the U. S. Army in 1917. During the late war he served as chief health officer in the Panama Canal Zone and directed the activities of six hospitals. He succeeds Dr. Charles C. Custer, retired. The sanatorium, with a total capacity of 1,700 beds, is the oldest and largest of the three state institutions for the care and treatment of tuberculosis victims who cannot afford private hospitalization.

Philadelphia

Society News.—The Philadelphia Psychoanalytic Society elected the following officers at its meeting June 14: Dr. LeRoy M. A. Maeder, Philadelphia, president and Dr. Robert S. Bookhammer, Philadelphia, secretary-treasurer.

Woman's Medical College Honors Seven Graduates.—At commencement exercises of the Woman's Medical College of Philadelphia on June 6 special citations were presented to seven members of the class of 1897 on the fiftieth anniversary of their graduation. The doctors are Louise B. Healy, Lexington, Ky.; Sylvia B. Martin, Landing, N. J.; Clara P. Fitzgerald, Worcester, Mass.; Edith Flower-Wheeler, Cortland, N. Y.; Martha G. K. Schetky, Philadelphia; Agnes Sholly-Knights, Selinsgrove, Pa., and Rosalie Slaughter-Morton, Winter Park, Fla.

SOUTH CAROLINA

State Medical Election.—At the annual meeting of the South Carolina Medical Association early in May Dr. Olin B. Chamberlain, Charleston, was made president; Dr. Clough H. Blake, Greenwood, vice president; Dr. Robert B. Durham, Columbia, president-elect, and Dr. Julian P. Price, Florence, secretary-treasurer.

Health Commissioner of Greenville.—Dr. Clarence L. Guyton, Columbia, has resigned as director of the state board of health division of venereal disease and cancer control and accepted the appointment of city health commissioner at Greenville. A graduate of the Medical College of South Carolina, Charleston, Dr. Guyton organized and developed the state's cancer control program.

VIRGINIA

Retired Navy Officer Becomes Health Officer.—Dr. Richard B. Blackwell, who has assumed the duties of health officer of Rockbridge County, succeeds Dr. Robert P. Cooke, who retired after serving twenty years as health officer. Dr. Blackwell recently retired from the navy after thirty years of service.

WEST VIRGINIA

Public Health Association.—At the annual meeting of the West Virginia Public Health Association at Clarksburg, May 16-17, the following officers were elected: Dr. Leon A. Dickerson, Madison, president; Mr. A. L. Lively, Bluefield, and Charlotte McLaughlin, Charleston, vice presidents, and Annette King, Charleston, secretary-treasurer. Mr. C. E. Bright, Romney, Dr. Thomas C. Sims, Fayetteville, and Mrs. Mary Jane Stienspring, West Union, were elected members of the executive board.

New Health Center Dedicated.—The new health center at Lewisburg was dedicated June 9. The headquarters for Health District No. 2 are located in the health center, which for years has been known as the "John A. Preston Community House," use of which was offered by the city's Women's Club. Mr. C. K. Swinell, White Sulphur Springs, presented the health center with laboratory equipment. As soon as additional equipment and personnel are available, the state health department will establish in the center West Virginia's first branch laboratory to the state hygienic laboratory. The state plans are to make this health unit a postgraduate training center in pediatrics for doctors in the state who wish to avail themselves of the knowledge of modern diagnostic methods in pediatrics.

PUERTO RICO

Tuberculosis in Puerto Rico.—Administrative control of the five tuberculosis hospitals was transferred from the Division of Public Health to the newly created Division of Hospitals during 1945. Tuberculosis, like malaria, is still one of the leading causes of death in Puerto Rico, although its incidence is decreasing. Case and death rates for 1945 were 281.6 and 202.2 per 100,000 inhabitants, respectively, compared with rates of 332.9 in 1944 and 215.4 in 1943. A total of 104,934 persons was examined in the 20 tuberculosis clinics, 128,752 persons were fluoroscoped, 16,602 chest x-rays were made. New cases discovered totaled 4,163. Pneumothorax treatment was given to 9,204 patients and 46,831 were given pneumothorax insufflations.

GENERAL

Committee of Revision of Pharmacopeia.—Following the resignations of C. Leonard O'Connell, E. E. Nelson and A. B. Lemon from the U. S. P. Revision Committee, Mr. John J. Dugan, New Haven, Conn., Frederick F. Johnson, Ph.D., Berkeley, Calif., and Dr. Austin E. Smith, Chicago, have been elected to fill the respective vacancies.

Allergy Academy Issues Directory.—The American Academy of Allergy has issued an alphabetical and geographic directory of its fellows and members. A biographic sketch of each physician is included. Copies may be secured on request to Dr. Theodore L. Squier, Secretary, the American Academy of Allergy, 424 East Wisconsin Avenue, Milwaukee 2.

Narcotic Violations.—The following physicians recently pleaded guilty at Atlanta, Ga., and Brooklyn, respectively, to violations of the Federal Narcotic Law and have been sentenced as follows: Dr. William R. Richards, Greensboro, Ga., eighteen months, and Dr. Paul V. Conboy, 842 Park Place, Brooklyn (placed on probation on March 27 for a period of five years).

Traffic Deaths in May.—The National Safety Council, Chicago, reports that traffic deaths in the United States for May 1947 totaled 2,710, an increase of 6 per cent over May of last year. For the first five months of this year the grand total was 11,990 deaths, a reduction of 11 per cent for the same period in 1946. Of 371 cities reporting, 236 had perfect records for May, the largest one being Providence, R. I., the second Salt Lake City and the third Wichita, Kan. For the five month period 111 cities had perfect records, the largest being Schenectady, N. Y., the second New Britain, Conn., and the third Evanston, Ill.

Gastroenterologic Award.—The National Gastroenterological Association has awarded Dr. Frederick Duran-Jorda, Manchester, England, its 1947 prize of $100 and a certificate of merit for the best unpublished contribution on gastroenterology. Dr. Duran-Jorda's paper on "Histopathology of the Semisquamous Epithelial Layer as Found in the Colon" was selected from twelve entries received from all parts of the world. The award was presented at the annual banquet of the association, Atlantic City, N. J., June 5 together with certificates of merit given to Drs. William Nimeh, Mexico City, D. F.; August Schrumpf and Trygve Kahrs, Porsgrunn, Norway; W. Paolino and G. Boccuzzix, Turin, Italy.

Aid for Child Spastics.—The sum of $250,000 is being set aside by the Children's Bureau, Department of Labor, for the development in 1948 of a program to aid juvenile victims of cerebral palsy. New York State will receive $50,000 from the Children's Bureau to train personnel in the technics of treating spastics to augment state appropriations of $25,000. Maryland and Alabama will also receive $50,000 grants and New Jersey $30,000. About thirteen states which have made a beginning in this field will receive small amounts from federal funds. The bureau estimates that there are in this country about 175,000 children with cerebral palsy.

Board of Ophthalmology Replaces Personal Interview.—At the last meeting of the American Board of Ophthalmology it was decided to replace the personal preliminary interview with a written qualifying test for all applicants. This is, in part, to save them the expense and time in traveling long distances when national meetings are held. The written test, therefore, will be held simultaneously in many parts of the country on Wednesday, July 23, at 1 p. m., and again during the winter, 1947-1948. Candidates then qualifying will be admitted to the practical examination. Registration for Chicago (limited to 60 candidates), October 7-12, has been closed.

Remington Medal Awarded.—The 1947 Remington Medal has been awarded Dr. Rufus A. Lyman, retiring dean of the University of Nebraska College of Pharmacy. The award, made by the New York Branch of the American Pharmaceutical Association, will be presented this fall. The honor is conferred on the person whose work is judged most important to American pharmacy by a committee of past presidents of the association. Dr. Lyman's advice and guidance have been sought in the councils of pharmaceutical educators for nearly four decades. In 1937 he founded and continues to edit the *American Journal of Pharmaceutical Education*. He took his medical degree at the University of Nebraska College of Medicine, Lincoln, practiced for a time in Omaha and then became professor of pharmacology at his alma mater. He was chosen director of the School of Pharmacy when it was established in 1908 and has only recently retired.

Tuberculosis Delegates to International Meeting.—The National Tuberculosis Association will be represented by five delegates at the meeting of the council of the International Union Against Tuberculosis in Paris, France, July 28 to 29.

The delegates are Drs. Kendall Emerson, New York managing director of the association, Esmond R. Long, Philadelphia, director for the division of research, H. Corwin Henshaw, vice president, Herman E. Hilleboe, Washington, D. C., assistant surgeon general, U. S. Public Health Service and member of the board of directors, and Mr. F. D. Hopkins, executive secretary. The council will discuss reorganization of the International Union Against Tuberculosis. In addition to those named to attend the Paris meeting, the National Tuberculosis Association's representatives on the council include Drs. J. Burns Amberson, Waynesboro, Pa., James R. Reuling, Bayside, N. Y., president-elect, and Herbert R. Edwards, New York, secretary.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

Cases Reported by State Health Officers

	Week Ended			Total to		Total *	
Division and State	June 28, 1947	June 29, 1946	Median, 1942-1946	June 28, 1947	June 29, 1946	Mar. 16-June 28, 1947	Mar. 17-June 29, 1946
New England:							
Maine	0	0	0	6	2	3	2
New Hampshire	0	0	0	5	2	1	1
Vermont	0	0	0	8	7	0	3
Massachusetts	0	0	0	8	7	1	3
Rhode Island	0	0	0	4	0	3	0
Connecticut	1	1	0	8	13	5	5
Middle Atlantic:							
New York	6	14	14	81	103	15	70
New Jersey	0	3	2	16	19	10	13
Pennsylvania	0	2	1	18	39	4	18
East North Central:							
Ohio	4	7	5	22	[illegible]	12	21
Indiana	0	2	1	25	16	4	11
Illinois	4	18	2	46	66	24	58
Michigan	0	3	1	35	15	11	7
Wisconsin	0	1	0	24	16	0	3
West North Central:							
Minnesota	0	10	1	23	21	10	20
Iowa	2	3	0	18	25	10	19
Missouri	2	8	1	23	22	13	15
North Dakota	0	0	0	18	3	13	3
South Dakota	0	3	0	2	3	0	3
Nebraska	3	1	0	27	4	20	3
Kansas	1	5	1	20	33	2	29
South Atlantic:							
Delaware	0	0	0	1	1	1	1
Maryland	1	0	0	11	4	5	2
Dist. of Columbia	0	0	0	3	1	1	0
Virginia	1	0	1	16	9	6	3
West Virginia	1	1	1	5	8	1	5
North Carolina	1	3	3	21	32	6	25
South Carolina	0	1	2	4	11	3	8
Georgia	3	8	1	16	31	9	23
Florida	3	21	1	48	282	23	233
East South Central:							
Kentucky	0	4	4	13	20	12	17
Tennessee	1	6	6	18	18	6	9
Alabama	1	6	1	23	97	10	94
Mississippi	0	3	2	22	38	5	21
West South Central:							
Arkansas	2	6	4	20	27	10	15
Louisiana	0	13	2	29	72	11	53
Oklahoma	0	10	3	16	39	5	33
Texas	3	52	52	69	292	44	264
Mountain:							
Montana	0	0	0	2	23	0	7
Idaho	0	1	0	13	1	3	1
Wyoming	0	0	0	4	1	1	0
Colorado	2	25	1	15	82	10	81
New Mexico	0	1	0	5	15	2	14
Arizona	0	1	1	11	7	8	4
Utah	0	3	0	5	12	0	6
Nevada	0	0	0	0	0	0	0
Pacific:							
Washington	1	3	0	23	56	15	23
Oregon	0	0	0	9	5	4	1
California	33	22	13	316	219	197	132
Total	76	273	..	1,200	1,852†	589	1,385†
Median, 1942-1946			190	1,084			

* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).

† Figures changed by corrected reports.

A New Medical Periodical.—The College of Medical Evangelists in Los Angeles has begun publication of a quarterly to be known as *Medical Arts and Sciences.* The periodical will contain articles which pertain to the practical, cultural, philosophical, experimental, investigative and critical sides of medicine. The leading article in the first issue, by Arthur L. Bietz, Ph.D., entitled "Religion and Health," is followed by an article in the field of surgery by Dr. Harry A. Davis, associate professor of surgery, College of Medical Evangelists, Los Angeles, one on cerebral anoxia by Dr. Cyril B. Courville, Rumford, Maine, and another on intracranial surgery by Dr. William T. Grant, Los Angeles. The editor in chief is Dr. Walter E. MacPherson, Los Angeles, and the managing editor Dr. Clarence W. Olsen, 312 North Boyle Avenue, Los Angeles. Matters pertaining to advertising should be sent to C. R. MacIvor, Review and Herald Publishing Association, Takoma Park, Washington, D. C.

Special Society Elections.—At April meetings the following societies elected officers: The American Association for the Study of Goiter chose Dr. James H. Means, Boston, president; Dr. Arnold S. Jackson, Madison, Wis., president-elect; Dr. Thomas C. Davison, Atlanta, Ga., secretary.——The American Otological Society, Inc., elected Dr. Bernard J. McMahon, St. Louis, president and Dr. Marvin F. Jones, New York, secretary.——The American Laryngological Association elected Drs. Arthus W. Proetz, St. Louis, president and Louis H. Clerf, Philadelphia, secretary.——At meetings in May the following elected officers: American Association of Pathologists and Bacteriologists, Drs. Malcolm H. Soule, Ann Arbor, Mich., president; Ernest W. Goodpasture, Nashville, Tenn., president-elect, and Howard T. Karsner, Cleveland, secretary.——The American Pediatric Society named Dr. Grover F. Powers, New Haven, Conn., president; Dr. Harold B. Cushing, Montreal, Que., president-elect, and Dr. Henry G. Poncher, Chicago, secretary.——The American Society for Experimental Pathology chose Drs. Douglas H. Sprunt, Memphis, Tenn., president, and Frieda S. Robscheit-Robbins, secretary.——The American Society for Pharmacology and Experimental Therapeutics elected Dr. Maurice H. Seevers, Ann Arbor, Mich., president, and Dr. Harvey B. Haag, Richmond, Va., secretary.——The Association of American Physicians elected Dr. Alvah H. Gordon, Montreal, Que., president, and Dr. Henry M. Thomas Jr., Baltimore, Md., secretary.

CORRECTIONS

Proceedings of the Atlantic City Session.—In the Proceedings of the Atlantic City Session in The Journal, June 28, page 804, second column, line 7, the words "Board of Trustees" should be substituted for the words "House of Delegates."

Vitamin D ("Ertron") Therapy in Arthritis.—In the article by Drs. Paul Kaufman, R. Donald Beck and Richard D. Wiseman on "Vitamin D ('Ertron') Therapy in Arthritis" in The Journal, June 21, 1947, page 690, lines 5 and 8, a decimal point was omitted from the blood calcium figures. They should read 14.7 mg. and 13.0 mg., respectively, rather than 147 mg. and 130 mg. per hundred cubic centimeters.

Iodine Deficiency in Goiter.—Dr. Isidor Greenwald, New York, referring to the editorial on this subject published in The Journal March 1, points out that the release made by Science Service was based on an article in the *Journal of Clinical Endocrinology* **6**:708 and an article in another publication, the *Bulletin of the History of Medicine* **17**:229, 1945. He cites these articles as evidence in support of his contention that deficiency of iodine is not related to the development of simple goiter.

Marriages

Rudy E. Ruark, Uniontown, Ky., to Miss Ruth Etoile Burkhalter of Winchester, Tenn., in Rossville, Ga., March 9.

Thomas William Quinn, Napoleon, Ohio, to Miss Annamae Joanne Maloney of Dunmore, Pa., July 27, 1946.

George W. Bounds Jr., Meridian, Miss., to Miss Doris Jean Condit of Neoga, Ill., in Iowa City March 9.

Claudius A. Clements, Daisy, Tenn., to Miss Gladys-Dean Stewart of Chattanooga, Oct. 27, 1946.

Walter Henry Patt Jr., St. Joseph, Mo., to Miss Frances Swinney of Harrisburg, Ill., recently.

George Dail Penick to Miss Marguerite Murchison Worth, both of Raleigh, N. C., February 8.

Clarence D. Barrett Sr., Dearborn, Mich., to Mrs. Edith M. Wyatt of Leslie Dec. 30, 1946.

Edward N. Stevenson to Miss Fredrika Moore Sasser, both of Memphis, Tenn., January 15.

Frank B. Snell, Baltimore, to Miss Virginia Lee Gregson in Sanford, N. C., January 4.

Deaths

Edward Coleman Ellett ⊕ Memphis, Tenn.; born in Memphis, Tenn., Dec. 18, 1869; University of Pennsylvania Department of Medicine, Philadelphia, 1891; served as the resident physician at St. Agnes Hospital and as house surgeon at Wills Eye Hospital, both in Philadelphia; in 1893 returned to Memphis, where he had been professor of opthalmology at the University of Tennessee College of Medicine from 1908 to 1922; secretary of the Section on Ophthalmology of the American Medical Association 1900-1901 and chairman of the section 1914-1915; past president of the American Ophthalmological Association, Memphis and Shelby County Medical Society and the Tennessee Academy of Ophthalmology and Otolaryngology; served as vice president of the Southern Medical Association; member of the Association for Research in Ophthalmology; fellow of the American College of Surgeons; in October 1942 given the Award of Merit of the American Academy of Ophthalmology and Otolaryngology in recognition of his services as president and member of the council; vice president and for many years a member of the board of directors of the National Society for the Prevention of Blindness; in 1939 in cooperation with the St. Louis Society for the Blind awarded the Leslie Dana Medal; member of the original American Board for Ophthalmic Examinations which later became the American Board of Ophthalmology, serving as consultant and at one time as its president; commanding officer of Base Hospital 115 in France with the rank of lieutenant colonel during World War I and received a citation for "exceptionally meritorious and conspicuous service"; discharged as a colonel in the medical corps of the U. S. Army Reserve; chief of staff of the Memphis Eye, Ear, Nose and Throat Hospital and on the staff of the Methodist Hospital; author of a chapter on "Disease of the Lacrimal Apparatus" in Berens's textbook The Eye and Its Diseases; received honorary degrees from the Southwestern College and the University of the South in Sewanee, Tenn.; died June 8, in Atlantic City while attending the annual session of the American Medical Association, aged 77, of coronary thrombosis.

William Emmet Gardner ⊕ Louisville, Ky.; born in Sonora, Ky., Aug. 24, 1877; University of Louisville Medical Department, 1902; professor of psychiatry at his alma mater; specialist certified by American Board of Psychiatry and Neurology; fellow of the American College of Physicians; member of the Southern Psychiatric Association, Kentucky Psychiatric Society and the American Psychiatric Association; formerly councilor of the Fifth District, president and vice president of the Kentucky State Medical Association; past president of the Jefferson County Medical Society and the Louisville Society for Mental Hygiene; affiliated with the Louisville Neuropathic Sanatorium; at one time superintendent of the Central State Hospital in Lakeland; member of the visiting staffs of the General Hospital, Norton Memorial Infirmary, St. Joseph Infirmary and Kentucky Baptist Hospital; lieutenant commander in the medical corps of the U. S. Naval Reserve; died April 8, aged 69, of coronary heart disease.

Malvern Bryan Clopton ⊕ Wianno, Cape Cod, Mass.; University of Virginia Department of Medicine, Charlottesville, 1897; served as president and member of the board of directors of Washington University Corporation and as professor of clinical surgery at the Washington University School of Medicine in St. Louis, where he had been on the staffs of the Barnes, St. Luke's, St. Louis Children's and the Jewish hospitals; served as president of the state board of health of Missouri and the Missouri Association of Occupational Therapy; member of the American Surgical Association, Southern Surgical Association, Western Surgical Association and the Society of Clinical Surgery; fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; served in France during World War I; died April 21, aged 71, of cerebral arteriosclerosis.

David Adiger ⊕ New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1913; served overseas during World War I; on the staffs of the Southern Baptist and Charity hospitals; died April 2, aged 57, of coronary thrombosis.

Merlin Zeno Albro, Chicago; College of Physicians and Surgeons, medical department of Columbia College, New York, 1887; formerly secretary of the Chicago Medical Society; died in the Wesley Memorial Hospital April 24, aged 81, of arteriosclerotic heart disease and cerebral vascular sclerosis.

Fred McKinley Bantum, Cumberland, Ohio; Eclectic Medical Institute, Cincinnati, 1918; died March 28, aged 52, of coronary thrombosis.

Frank Asahel Burnham ⊕ Arnold, Neb.; University of Nebraska College of Medicine, Omaha, 1911; past president of the Custer County Medical Society; for many years served on the board of education and the library board; died April 6, aged 69, of cardiorenal disease.

Herman S. Ehrenreich, St. Louis; St. Louis College of Physicians and Surgeons, 1906; served during World War I; major, medical reserve corps, not on active duty; died March 31, aged 68, of coronary thrombosis.

Otis W. Fesmire, Atwood, Tenn.; University of Tennessee Medical Department, Nashville, 1905; member of the American Medical Association; formerly a druggist; past president of the Carroll County Medical Association; died March 31, aged 71, of heart disease.

William Henry Hurley ⊕ Northfield, Vt.; Maryland Medical College, Baltimore, 1903; served during World War I; died April 26, aged 69, of coronary thrombosis.

Charles Michael Kent, Kenedy, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1915; member of the American Medical Association; past president of the Karnes-Wilson Counties Medical Society; served during World War I; formerly owner of the Kenedy Clinic and Hospital; died February 28, aged 58, of cerebral hemorrhage.

David Isaac Nalitt ⊕ Bayonne, N. J.; Baltimore Medical College, 1901; vice president and president-elect of the Hudson County Medical Society; past president of the Bayonne Medical Society; examining physician for the Selective Service in Hudson County for many years; on the staff of the Greenville Hospital in Jersey City and on the staff of the Bayonne Hospital, where he died April 4, aged 68, of coronary occlusion.

William Charles Ohlendorf, Park Ridge, Ill.; Chicago Medical College, 1882; died March 17, aged 89, of myocarditis and diabetes mellitus.

Justus Edgar Olsson, Lexington, Neb.; University of Nebraska College of Medicine, Omaha, 1910; served overseas during World War I; on the staff of the Community Hospital; died March 22, aged 63, of cerebral hemorrhage.

Louis Edward Penner, Beatrice, Neb.; University of Nebraska College of Medicine, Omaha, 1904; member of the American Medical Association; on the staffs of the Lutheran Hospital and the Mennonite Hospital, where he died March 25, aged 72, of carcinoma of the lung.

Robert E. Lee Ringo, West Palm Beach, Fla.; University of Louisville (Ky.) Medical Department, 1898; died February 23, aged 74.

Frank Fishel Sandler ⊕ Revere, Mass.; Tufts College Medical School, Boston, 1915; member of the American Society of Anesthetists; served during World War I; chairman of the board of health; died March 24, aged 55.

James Guy Van Scoyoc ⊕ Los Angeles; John A. Creighton Medical College, Omaha, 1914; also a graduate in pharmacy; assistant clinical professor of medicine at the University of Southern California School of Medicine; formerly on the faculty of the University of Utah School of Medicine, Salt Lake City; served during World War I; on the staff of St. Vincent's Hospital; died March 23, aged 56, of cerebral vascular accident.

Walter Levi Slifer, Philadelphia; Jefferson Medical College of Philadelphia, 1903; died February 20, aged 65.

Homer Hinton Tallman ⊕ Culver, Ind.; Northwestern University Medical School, Chicago, 1900; served during World War I; major, medical reserve corps, U. S. Army, not on active duty; member of the chamber of commerce and the Lions Club; affiliated with the Parkview Hospital in Plymouth and the Kelly Hospital in Argos, where he died March 29, aged 73, of hypostatic pneumonia.

Ralph Waldo Wakefield ⊕ Bar Harbor, Maine; Jefferson Medical College of Philadelphia, 1902; past president of the Maine Medical Association and the Hancock County Medical Society; member of the New England Surgical Society; fellow of the American College of Surgeons; president of the Bar Harbor Banking and Trust Company; on the staff of the Mount Desert Island Hospital; died March 31, aged 69, of coronary thrombosis.

Magdalena Wambsganss, Newark, N. J.; George Washington University School of Medicine, Washington, D. C., 1917; member of the American Medical Association; on the staff of the Lutheran Hospital, where he died March 28, aged 64, of heart failure following a cholecystectomy.

William Clyde West ⊕ Alexandria, Va.; Medical College of Virginia, Richmond, 1920; served during World War I; past president of the Alexandria City Medical Society; formerly health officer; died April 1, aged 54.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 31, 1947.

A New Survey of the Prevalence of Illness

A new survey of the prevalence of illness has been introduced. Sir William Jameson, chief medical officer of the Ministry of Health, states that it provides basic information of great value in adjusting the health services to the needs of the community and "in assaying the progress of our work" Until recently the only illnesses on which there were definite figures were the compulsorily notifiable diseases. There were also of course the national insurance records, but these dealt with only part of the population and with illness causing incapacity for four or more days. There was no nationwide measurement of the amount of general illness or of the incapacity resulting from it. To supply this the government has during the last three years been conducting by a social survey organization which it uses for various purposes a continuous survey of the prevalence of illness. The method adopted is a sampling inquiry from which conclusions can be drawn as to the whole population. The work is done by trained interviewers, mostly women. About 3,000 people are chosen at random every month, each time in a different district. The interviewers ask them questions about their health, housing conditions, occupation and income. The survey is voluntary and confidential, and only 0.5 per cent of those interviewed have declined to take part The replies are collected and dealt with by medical statisticians.

Among the facts brought to light the following are the most important: In England and Wales the annual loss of men's work through illness is about 250 million man-days. In 1945 1 out of every 5 people had a cold in January, 1 out of 20 in July. Women complain of about 25 per cent more minor ailments than men, but for defined illness of a more serious nature there is little difference between them. The amount of new illness does not increase as age advances. The rate at which people consulted their doctors in 1944 averaged about 6 attendances a head of the civil population over the age of 15. There were vast differences in the rates of incidence in various occupations. Illness occurs less frequently among those employed in mining and quarrying than in any other occupation, but injury more frequently. In distributive employment both illness and injury occur relatively seldom; but, on the whole, where illness is relatively frequent, injury is relatively rare, and vice versa. Residents in urban areas are not freer than rural dwellers from illnesses of any kind, but there are some to which they are particularly prone. In the whole sample the estimated average number of days' incapacity caused by all sickness was only 1.4 per person monthly in the winter months of 1944-1945.

The Nostrum Evil

The nostrum evil has often been denounced but it continues to flourish, as advertisements in the press and at railway stations and other public places show. The approaching national health service has produced apprehension of an increase of the evil. This may seem strange, as one would think that the provision of all kinds of medical treatment for which no payment will be made should diminish the demand for expensive nostrums. But the national health insurance act, which did on a smaller scale what the national health service is to do universally, was followed by an increased consumption of nostrums. The psychologic reason is simple. The British public is prone to think little of what can be obtained for nothing and believes that nostrums must be valuable because so expensive.

The Pharmaceutical Society is making a determined effort to check the nostrum evil. It has transmitted to the ministry of Health a memorandum based on a five year inquiry, which runs to 14,000 words. "Throughout the pages of most newspapers and periodicals in general circulation," says the report, "sufferers from all manner of diseases and ailments are offered beans, tablets, wines, powders, salts, pills, ointments, tonics, hormones, glands and vaccines that will bring them youth, health, charm, slimness, inner cleanliness, lively livers, increased (or decreased) weight, iron for the blood, purer blood, vitamins, contentment, resolution, immunization." Nostrums are advertised in terms which tend to make the public conscious of diseases, to regard ill health as the normal condition, encourage self medication as a habit and postpone the seeking of skilled advice. The advertising of nostrums is so extensive that the influence of advertisers prevents the ventilation of reforms in the press. The society urges that the sale of unregistered medicines should be prohibited and that standards for medicines and for advertisments should be prescribed. For this work the government should be assisted by an advisory committee of physicians and pharmacists. The nostrum venders have an association which has attempted a reply in the press to these accusations. It alleges that the censorship work of their association and of the Newspaper Proprietors Association has "practically eliminated all undesirable forms of advertising" In the light of the findings of the Pharmaceutical Society that word "practically" can be regarded as only an admission which falls far short of the reality.

A Death from Pethidine

The first case of death from the new analgesic pethidine has been observed in London. A clerk aged 44 was found unconscious in a hotel and died soon afterward. Four bottles of ¾ grain tablets of pethidine, from which fifty-four were missing, were found in his room. At the inquest Dr. G. Roche Lynch, toxicologist, gave evidence that this was the first case of pethidine poisoning that he had met. The drug is described as the hydrocloride of the ethyl ester of 1-methyl 4-phenylpiperidine 4-carboxylic acid.

PARIS

(From Our Regular Correspondent)

June 15, 1947

Unprecedented Number of Births

The National Service of Statistics has published figures of the movements of the population in France for the first half of 1946. The number of living births was 428,261 as against 313,630 in 1945 and 311,677 in 1939 for the same period The total figure covering deaths was for the first six months of 1946 305,226 as against 356,918 in 1945 and 350,076 in 1939 These figures show an excess of births of 123,035 for the first half-year of 1946 instead of an excess of deaths amounting to 33,288 for the same period of 1945 and of 37,399 for 1939. It is the first time in eleven years that France has had such an excess of births, and it is, moreover, of an unprecedented magnitude There were 244,990 marriages during the first half-year of 1946 as against 135,028 and 124,034 for the same period of 1945 and 1939 respectively. An increase of divorces for the first half-year of 1946 is to be noted; they amount to 21,159 as against 10,166 and 11,900 for the same periods of 1945 and 1939 respectively; this is due to postwar conditions and also to the accumulation of delayed registering. As regards the death rate of children under 1 year of age, the situation has improved in comparison with 1945. The death rate for 1946 works out at 67 per thousand children born alive as against 108 per thousand for 1945. This diminution is due to the amelioration of the sanitary conditions and to legislation concerning the maternity and infantile protection; this death rate remains nevertheless higher than the death rate of 1938, which was 66 per thousand of children born alive

Treatment of Multiple Osseous Metastasis with Radium

Up to the present, the radiotherapy of cancer has had its drawbacks and limits on account of the impossibility of using massive doses without incurring the risk of either destroying normal tissues or of producing anemia. Dr. P. Lehmann of the Bichat Hospital set forth before the Academy of Sciences in 1941 a new process for diminishing artificially the radiosensitivity of the skin and mucosa in roentgen therapy. The author used the following ointment, which is spread on the skin previously cleaned: epinephrine 0.01 Gm., stovaine 1 Gm., benzoinated hog fat 100 Gm. For the desensitization of the pharyngolarynx he uses glycerin as an excipient. He also presented to the Paris Society of Medicine the first results of this new method of radiotherapy of cancer, which enabled him to treble the usual dose of x-rays without manifestation either immediate or belated of any radiolesion. At a recent meeting of the Academy of Surgery Dr. P. Lehmann presented 4 cases of multiple osseous metastasis of cancer of the breast selected from a large number which have been treated with massive doses of x-rays. A patient received in twenty-two months 55,000 roentgens through various fields and seventy-eight courses of total teleradiotherapy. Another had fifteen courses of total teleradiotherapy within six weeks and locally 6,000 roentgens; pains have disappeared, the general condition has improved rapidly and the examination of the blood disclosed a normal blood formula. After one year the patients are doing well. During the treatment the author saw a calcic reconstruction of the bones invaded by cancer, while neoplastic tissues are destroyed and disappear. There is not, therefore, a danger of spontaneous fracture, and it is not necessary to keep the patients laid up or to maintain them by means of an orthopedic corset. He has also found that by means of the combination of total teleradiotherapy and of local irradiations it is possible to treat in the same patient a series of concomitant metastases without determining by irradiation a new seat of evolutive outbreak elsewhere. It is interesting that the irradiated segment remains cicatrized and that no growth of cancer occurs there. Lehmann has observed that by massive doses of x-rays it is possible to bring to view, under the form of rounded opacity, latent metastases and to treat them precociously. At a meeting of the Society of Dermatology the same author, taking as a basis fifty observations of irradiated cancers, demonstrated the nonexistence of x-ray anemia so much dreaded up to now. The anemia in the irradiated cancerous patient, he said, is not due to radiotherapy but to the evolution of the disease. By not letting metastases develop, which has become possible thanks to the new Lehmann process, anemia regresses as from the third week of radiotherapy with massive doses. We are now in possession of a method permitting extension of the life of patients with multiple metastases.

Registering the Mode of Action of Antibiotics

Recent technical progress has permitted following in vitro, by photometric registering, the stages of the fight of drugs against microbes. Bonet-Maury and Walen's differential registering photometer registers simultaneously six curves of growth of bacterial cultures contained in special vials through which passes a luminous ray and which are constantly mechanically agitated. The apparatus works automatically, night and day, in a room kept at 37 C. At a meeting of the National Academy of Medicine Bonet-Maury, chief of service at the Fournier Institute, Paris, has set forth the results of research which demonstrates that each antibiotic has a distinctive curve. Sulfonamides have a checking action on staphylococci, without bactericidal action or lysis. Real bacteriostasis in vitro is obtained only by very high concentrations of sulfonamides, much superior to those realized in the organism in the course of a treatment. The action of a few hundred Oxford units of penicillin (dose much inferior to the one realized in the organism) is much more complex, either bactericidal, bacteriostatic, lytic or checking. While the action of a penicillin-sulfonamide mixture is synergic, it is penicillin which imposes its mode of action on the mixture. The action of streptomycin on Escherichia coli gives curves similar to the curves of penicillin on staphylococci, but with the latter, with a feeble dose a checking action without lysis is observed. Streptomycin requires doses about one thousand times higher than penicillin for stopping multiplication. This new method permits study of the modus of action of an antibiotic, which it has been impossible to check heretofore.

COPENHAGEN

(From Our Regular Correspondent)

June 7, 1947.

International Conferences in Copenhagen

The repeated choice of Copenhagen for the holding of international medical conferences suggests that this city enjoys a growing reputation as a medical center. From July 20 to 26 of this year the fourth International Congress of Microbiology is to be held in Copenhagen under the presidency of Denmark's Grand Old Man in medicine, Dr. T. Madsen, and the vice presidency of Professor S. Orla-Jensen. The first of the nine different sections will be directed by Professor K. A. Jensen, whose work on antibiotics is well known. Professor S. A. Waksman is among the Americans listed to speak on antibiotics. Between twenty and thirty papers will be presented in each section, a quarter of an hour being allotted to each paper. Another international congress to be held this year in Copenhagen is the first European Rheumatology Congress on September 4-8, over which Professor Cai Holten will preside. For further information on this subject apply to Rigsforeningen til Bekaempelse av Rheumatiske Sygdomme, Rysensteensgade 16, Copenhagen V.

The Treatment of Burns

For some forty years the treatment of burns in Copenhagen has been concentrated in the Rudolph Bergh Hospital. Between 1916 and 1935 the mortality was 7.1 per cent, being as low as 5.2 per cent in the latter part of this period, 1930-1934. Between 1938 and 1945 the annual mortality ranged from 2.1 to 4 per cent. How has this remarkable reduction in the mortality been achieved? In the opinion of Dr. A. Kristiansen of this hospital the main credit belongs to the greater attention paid to the patient's general condition, i. e. to the combating of shock. In the period under review fashions have changed in local treatment, not always for the better: witness the brief rise and sudden decline in the popularity of treatment with tannic acid, whose provocation of central necroses in the liver has led to its downfall. At present local treatment consists largely of antiseptic ointments on appropriate dressings, penicillin ointments being among the latest innovations. Another movement is toward closer cooperation between physicians and surgeons with a view to timely skin grafting. At the Rudolph Bergh Hospital Dr. Kristiansen often recommends the transfer of his patients to surgical care some three weeks after a burn. The paper which Dr. A. Zacho and Dr. A. Gammeltoft presented last year on the subject of burns at a meeting of the Danish Surgical Society included a plea for early skin grafting.

Rheumatic Fever and Hemolytic Streptococci

At Medical Department B of the Odense County and City Hospital, antistreptolysin titer tests are carried out as a routine measure in cases of rheumatic fever. Throughout 1943 and 1944 all the 127 rheumatic fever patients in this hospital were thus tested. Dr. Fritz Harving, who recently gave an account of this test at a medical meeting at Odense, pointed out that this titer was definitely raised in 81 per cent of his cases, and that in the remaining 19 per cent there were certain features distinguishing them from the majority. At any given moment the test is apt to be misleading, but a sustained comparison of its behavior with the clinical course of the disease reveals a correlation which is instructive; and when a high titer shows no tendency to fall, it is well to suspect that the disease is still active even when clinical evidence is suggestive of its arrest.

Penicillin Research in Denmark

The reports presented in 1946 at a meeting of the Danish Medical Society have been published in *Nordisk Medicin* for March 21 and give a good bird's eye view of the results of the systematic team work in this field undertaken by the Danes The bacteriologist Professor K A. Jensen has played a leading part Intramuscular injections given every third hour, are on the whole, preferred in Denmark to continuous intramuscular or intravenous injections, and at the Blegdam Fever Hospital penicillin is given with epinephrine by subcutaneous injections three times a day. At each of these three injections 100,000 units is given. The clamor by the public for penicillin treatment for every conceivable ill has, of course, become a veritable nuisance.

BRAZIL

(From Our Regular Correspondent)

São Paulo, May 27, 1947.

The Use of Leukotomy in Epilepsy

As soon as the cerebral leukotomy of Egas Moniz, Freeman and Watts was introduced in psychiatry as a method of treatment its application was extended to epilepsy with not very encouraging results Dr. Mário Yahn at the Hospital de Juquery, São Paulo, chose six chronic epileptic patients to study the effects of frontal and parietal leukotomy One patient with a psychopathic personality, misconduct, hysteria and epileptic fits fully recovered after the operation In 2 patients with infantile encephalopathy, hemiplegia and deviations of behavior, 1 greatly improved as to the number of seizures, without mental changes In the other the number of seizures was later reduced. Of 3 patients considered to have essential epilepsy with deviations of behavior, in 2 good results were obtained, although the third showed signs of aggravation The mental state of 1 patient was improved.

Dr. Mário Yahn believes that the verified improvements do not depend directly on the sectioned pathways but on a new postoperative integration Leukotomy cannot yet be used as a routine method of treatment for epilepsy'

Only chronic and very serious cases with frequent seizures and misconduct with whom other methods of therapy have failed should be treated by cerebral leukotomy.

Salmonella in Meat Products

Various types of meat products obtained from different butchers of São Paulo were examined for the presence of Salmonella by Dr. Lucas de Assunção, professor of bacteriology of the Faculdade de Saude Publica e Higiene of São Paulo. Of the 153 samples analyzed, 15 per cent were found to be positive. Dr. Lucas Assunção examined meat and entrails of pork, beef, kid, mutton and chicken. The pork products gave the highest number of positive tests, the most contaminated organ being the liver. The incidence was found to be less in beef (10.6 per cent) than in pork (19 per cent). Of 7 samples of kid meat analyzed 1 was positive (14.2 per cent) and also 1 out of 10 chicken samples Of 55 cultures of salmonella isolated, 25 were identified Of the nonidentified group some were not examined. Salmonella anatis, Salmonella give, Salmonella typhimurium, Salmonella cholerae suis (var. Kunzendorf), Salmonella newington, Salmonella london, Salmonella derby and Salmonella paratyphi B were the types of Salmonella isolated and classified according the Kauffmann-White scheme

Treatment of Intestinal Amebiasis

Dr. Felicio Cintra do Prado, professor at the Escola Paulista de Medicina, in a symposium describes a comparatively simple general method for the treatment of amebiasis Treatment is effected in four months, during which the specific arsenical and iodoquinoleinic medicaments are alternated, always orally, in weekly consecutive series; emetine is administered only to stop the diarrhea and for the extraintestinal localization of Endameba histolytica The specific medication must be complemented by hygienic and dietetic measures and by auxiliary medication intended to attack intestinal infections frequently associated with amebiasis. Symptomatic, antispasmodic and sedative treatments are useful in many cases.

Professor Cintra do Prado based his work on a few hundred observations made in his private clinic. He selected 140 cases and followed them up closely for over a year. The therapeutic results in the 140 cases were as follows: complete clinical cure in 98 cases (70 per cent), the amebas having disappeared from the feces; incomplete cure in 24 cases (17.1 per cent), as notwithstanding negative parasitologic tests of the feces the patients remained subject to sporadic intestinal disturbances; poor results in 18 cases (12 per cent) (16 cases of clinical amelioration and negative tests but persistence of colitis with varied general repercussions; 2 cases of relapse within one year, probably caused by reinfection).

PERU

(From Our Regular Correspondent)

May 27, 1947.

Pan American Tuberculosis Congress

The seventh Pan American Tuberculosis Congress was held in Lima, Peru, March 17-22. Brazilian official speakers were Dr. Manoel de Abreu on "Examination of Workers," Dr. Eduardo Etzel on "Tuberculous Tracheobronchitis" and Dr Cezar de Araujo on "Social and Economic Protection of Tuberculous Patients." Drs. A. Nogueira Martins and B. Pedral Sampaio, Brazilian co-speakers and representatives of the government, spoke on "Results of Examinations of Workers in São Paulo."

The congress resolved, on the first topic, (1) to broaden the examination of workers by extending periodic tuberculin tests and roentgenographic tests (Manoel de Abreu's method) eventually to all groups; (2) to establish the practice of carrying on examinations of workers in state institutions, the Social Insurance and the Beneficence, and by means of portable x-ray units to give such benefits to people living in suburban and rural communities.

On the second topic, the congress resolved that (1) tuberculous tracheobronchitis includes bronchoscopic lesions of the trachea and large bronchi only: however, it is necessary to consider the lesions of the small bronchi, which cannot be visualized by bronchoscopy as a part of the disease; (2) routine bronchoscopy is recommended in all cases with suggestive clinical and x-ray symptoms; systematic bronchoscopy is reserved to departments lacking in a specialized section for peroral endoscopy; (3) bronchial lesions in general do not contraindicate the treatment of pulmonary tuberculosis by the method of either collapse or resection; (4) the creation of specialized departments for this examination in all centers for the care of tuberculous patients is advised

On the third topic the congress recommended the establishing of measures for the social and economic protection of tuberculous patients which permit them to have adequate treatment and requested the governments of all Latin American countries to revise the social regulations on work, communicable diseases, industrial hygiene and social insurance with the aim of improving the protection of tuberculous patients and the public.

Correspondence

FATAL ALLERGIC REACTION TO INFLUENZA VACCINE

To the Editor:—In Clinical Notes in The Journal, April 12, appears a report by Dr. Theodore J. Curphey of a case purported to represent a fatal allergic reaction due to influenza vaccine. The implication is made that egg antigen contained in the vaccine was the responsible exciting factor. In a letter to the Editor in The Journal of May 31 Dr. David Louis Engelsher comments on this case and states that in his opinion the death was due to sensitivity to the bacteria of the vaccine and not to the contained egg.

Aside from the fact that the 3½ year old patient became violently ill four hours after receiving a subcutaneous injection of 0.5 cc. of stock influenza type A and B vaccine and died eleven hours after the injection, there is little in the entire report to support the diagnosis of allergy. There was no known family history of allergy. The past personal history of allergy on which Dr. Engelsher rests his specific diagnosis is highly questionable, to say the least. The assumption of a positive past personal history of allergy is based on the following remark in the report: "It was stated, however, that the child had had hives for one day during the first year of life, which were thought to follow medication with acetylsalicylic acid."

No passive transfer study of the postmortem blood for the identification of egg or other reagins is mentioned, though a failure to have found them would not have been conclusive evidence against the existence of sensitivity to egg.

The relatively long interval of four hours between the injection and the first appearance of severe symptoms, the absence of characteristic allergic manifestations, the clinical course and the autopsy findings are not at all suggestive of an intense allergic phenomenon.

In their review of 26 cases, including 7 of their own, of sudden death following injection of foreign protein, Vance and Strassmann in 1942 stressed the fact that most of the cases presented clinical signs or pathologic lesions in the lungs indicating death by asphyxia. The onset was sudden, respiratory difficulty starting immediately or within ten to thirty minutes after the injection, death occurring within a few minutes or after a few hours. In 21 of the 26 cases death occurred within one hour following the injection, in most instances in a few minutes. At autopsy the lungs were found inflated with air. Microscopically, among other changes, eosinophilic infiltration into the bronchial nodes or into the submucosa of the bronchi was present in every case in which a microscopic examination was made; in 2 out of 6 cases, in addition, eosinophils were found in the submucosa of the gastrointestinal tract, in the spleen and in 1 instance also in the liver.

In the one set of identical twin infants who died after a second injection of diphtheria toxoid and pertussis antigen, alum precipitated, reported by Werne and Garrow in June 1946 there was neither clinical nor pathologic evidence of bronchial obstruction of a degree sufficient to cause death. However, there were a positive family history of allergy, extreme narrowing of some bronchial lumens, numerous eosinophils in the lymphatic tissues and slight eosinophilic infiltration into both bronchial and pulmonary arterial walls, the arterial walls of the thymus showed an eosinophilia, the sinusoids of the liver contained a moderate number of eosinophils and there was some eosinophilic infiltration into the vascular and perivascular structures of the brain. This eosinophilic response was present along with other evidence of vascular injury.

Dr. Curphey's case exhibited no characteristic allergic clinical symptoms or signs; pathologically, the presence of generalized visceral hemorrhage and the presence of "only occasional eosinophils" in the sections of the lungs and of moderate eosinophilic infiltration of a lymph node do not by themselves constitute sufficient ground on which to make a diagnosis of allergy.

It is my belief that the case reported is not one involving the reaction of hypersensitivity. There is much in the report to suggest a hyperacute, fulminating type of infection, possibly in the nature of the Waterhouse-Friderichsen syndrome, notwithstanding the absence of hemorrhage into the bilaterally atrophic adrenals, as the cause of death.

S. Senior Sack, M.D., Flushing, N. Y.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in The Journal, July 5, page 915.

BOARDS OF MEDICAL EXAMINERS

California: *Written.* Los Angeles, Aug. 25-28. *Oral.* San Francisco, July 19-20. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento 14.

Delware: *Endorsement.* Dover, July 15. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

Georgia: Atlanta, Oct. 14-16. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Idaho: Boise, July 14-16. Sec., Bureau of Occupational Licenses, Dr. S. M. Poindexter, Eastman Bldg., Boise.

Kentucky: *Examination.* Louisville, Sept. 22-24. Sec., State Board of Health, Dr. P. E. Blackerby, 620 S. Third St., Louisville 2.

Montana: Helena, Oct. 6-8. Sec., Dr. Otto G. Klein, 302 N. Main St., Helena.

New Hampshire: *Examination.* Concord, Sept. 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

North Carolina: *Endorsement.* Morehead City, July 31. Sec., Dr. Ivan Proctor, 226 Hillsboro St., Raleigh.

South Dakota:* Pierre, July 15-16. Sec., Medical Licensure, State Board of Health, Dr. Gilbert Cottam, Capitol Bldg., Pierre.

Washington:* Seattle, July 14-16. Sec., Miss Virginia Wotherspoon, Department of Licenses, Olympia.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: Juneau, First week in August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Arizona: Sept. 16. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Colorado: *Examination.* Denver, Sept. 17-18. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

District of Columbia: *Examination.* Washington, Oct. 20-21. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 1. Final date for filing application is Oct. 16. Sec., Dr. W. M. Emmell, University of Florida, Gainesville.

Michigan: *Examination.* Ann Arbor and Detroit, Oct. 10-11. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

Nebraska: *Examination.* Omaha, Oct. 7-8. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, State Department of Health, Room 1009, State Capitol Bldg., Lincoln 9.

New Mexico: *Examination.* Santa Fe, Aug. 3. Sec., Miss Marion M. Rhea, % State Land Office, Santa Fe.

Oklahoma: The date for the next examination has not been set as yet but will be sometime in the spring of 1948. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, Sept. 6. Final date for filing application is Aug. 20. Sec., Board of Higher Education, Basic Science Examining Committee, Mr. C. D. Byrne, University of Oregon, Eugene.

Rhode Island: *Examination.* Aug. 13. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Wisconsin: *Examination.* Madison, Sept. 27. Final date for filing application is Sept. 20. Sec., Mr. William H. Barber, Watson and Scott Streets, Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Charitable Status of Hospital to Foster the Practice of Osteopathy.—The plaintiff hospital filed a proceeding against the Unemployment Compensation Commission of Missouri to review a decision of the defendant that services performed in the employ of the hospital are not excluded from the statutory definition of the term 'employment' as used in the unemployment compensation law From a judgment affirming the commission's finding, the hospital appealed to the Supreme *Court of Missouri*

The Unemployment Compensation Law provides that the term 'employment' shall not include '(F) service performed in the employ of a corporation community chest fund, or foundation organized •and operated exclusively for religious charitable, scientific, literary, or educational purposes or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private share holder or individual, ' The Northeast Hospital was first incorporated in January 1936 under the laws of Missouri governing manufacturing and business corporations On Dec 27, 1940 the present corporation was formed by a pro forma decree of the Circuit Court under the name of Northeast Hospital It acquired the business and assets of the original Northeast Hospital, a corporation, which was dissolved and continued the operation of the hospital On Jan 31, 1944 the name of the corporation was changed to Northeast Osteopathic Hospital, the name by which it is now known by decree of the same court

The hospital contends that it is a corporation "organized and operated exclusively for *charitable* purposes" The commission held as a matter of law and decided (and the decision was affirmed by the *reviewing court) that services* performed by all persons in the employ of the hospital "are in 'employment' within the meaning of the term 'employment' as it is defined in the unemployment compensation law, and that no part of such services are excluded from the definition of 'employment' subject to the law by the provisions" of section 9423 (1) (6) (f) The Supreme Court said that the hospital, organized under the laws governing manufacturing and business corporations, had no shares of stock (hence no share holders) Under the facts the hospital is operating on a nonprofit basis in the sense that no part of net earnings inures to the benefit of a private individual

Among the purposes of the organization, as stated in the Articles of Incorporation are the following Fourth This association is formed for the purpose of owning operating and maintaining the Northeast Hospital Kansas City, Misssouri, and such other hospitals or institutions as it may in the future acquire, to foster and encourage the study and practice of osteopathy, to foster and encourage scientific research, to buy, sell, mortgage, encumber, lease and deal in land and buildings in Kansas City and elsewhere for the purpose of fostering and encouraging the study and practice of osteopathy, to buy, sell, mortgage, and encumber, lease, and deal in equipment and other personal property which may be necessary to provide facilities for the study and practice of osteopathy, to employ interns, nurses, and others to carry on the work of the Northeast Hospital and such other hospitals or institutions as this association may acquire, to do each and every act which may be necessary to carry out the purposes for which this association is formed"

It is contended by the hospital that sole resort must be had to its charter for determination of the claimed exemption The cases cited in support of this contention, said the Supreme Court, are in harmony with the general rule that the purpose of an organization must be determined from the purpose declared in the instrument creating it In other words, the Supreme Court continued, the hospital must demonstrate itself to be both organized and operated exclusively for charitable purposes in order to be excluded by the provisions of the unemployment compensation law Was hospital organized and is it operated exclusively for charitable purposes? Hospital asserts it was and is Commission, a tax collecting agency in a sense, has the right in this case to challenge the claim of immunity from taxation which the hospital seeks to invoke Briefly, said the court, it has been stated that the test in determining whether a hospital is charitable or otherwise is whether or not it is maintained for a gain, profit, or advantage The plaintiff hospital's pro forma decree of incorporation did not recite or recognize hospital s corporate purpose as charitable, while the hospital's charter includes the purpose of operating a hospital, or hospitals, the articles are not otherwise expressive of a charitable purpose Some purposes, additional to that of maintaining a hospital, as stated in the articles of agreement are "to foster *and encourage* the study and practice of osteopathy" and to "buy, sell mortgage, encumber, lease, and deal in" realty and personalty "which may become necessary to provide facilities for the study and practice of osteopathy", *and the fact that the hospital* 'provides facilities for the *practice of osteopathy*" was *also* found as a fact by commission's special representative, whose findings were adopted by the *commission* Perhaps *all* hospitals in some degree further and provide facilities for the practice of the *practitioners of some school or* schools of the science of healing, said the court, but would a corporation organized for the *purposes of fostering and* encouraging and providing facilities for *practice of some school* or schools of the science of healing be a corporation organized exclusively for charitable purposes—*even though* the corporation also had the purpose of maintaining a hospital, and even though no part of the net earnings of a corporation inured to the benefit of a share holder or a private individual? This brings us, said the court, to an examination of the meaning of the word "exclusively" Manifestly the *exemption* in the unemployment compensation law is in recognition of the great benefit the public derives from institutions *exclusively* charitable A substantial noncharitable purpose of the hospital's organization should be fatal Otherwise, by a noncharitable purpose of organization, a corporation, although it were also organized for a charitable purpose, would or could in the exercise of its noncharitable power, exploit its noncharitable purpose and destroy or materially shade the fulness of its committed service in the public welfare and all the while defeat the purpose of the law under the guise of the charitable purpose The purposes of fostering and encouraging and providing facilities for the practice *of osteopathy*, said the Supreme Court, are quite clearly professional and not charitable in nature It should not be held that the purpose of fostering, encouraging and providing facilities for the practice of a profession are charitable within the meaning of the unemployment compensation law, and such purposes if they are seen to be substantial, should prevent a hospital's exclusion from the purview of the unemployment compensation law In the hospital's statement of corporate purposes there is an absence of a clear expression of a plotted, primary, dominant objective to foster and encourage the relief of, and provide facilities for the hospitalization of, those who are diseased or injured or who suffer constraint in body or mind—this in our opinion lends emphasis to and conclusively demonstrates the substantiality of the expressed non charitable purposes The whole record justifies the conclusions that the hospital was organized and the hospital operated by osteopathic physicians for the purposes of fostering and encouraging and providing facilities for the practice of osteopathy and that the maintenance of the hospital is but importantly incidental to such purposes Accordingly the judgment affirming the decision of the Unemployment Compensation Commission was affirmed by the Supreme Court—*Northeast Osteopathic Hospital v Keitel, 197 S W (2d) 970 (Mo, 1946)*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). *Periodicals published by the American Medical Association* are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

16:253-280 (Feb.) 1947

Closure of Abdominal Incisions. T. B. Hubbard.—p. 253.
Exstrophy of Bladder. Case. S. K. Cohn, J. W. Headstream and B. Barelare.—p. 255.
Use of Quantitative Serologic Tests in Diagnosis and Treatment of Syphilis. H. L. Holley.—p. 259.
Practical Considerations in Treatment of Early Syphilis. R. O. Noojin.—p. 262.
Varicose Veins. C. J. Donald Jr.—p. 267.

16:281-316 (March) 1947

Preoperative Management of Hyperthyroidism. Use of Thiouracil and Thiobarbital. R. F. Guthrie.—p. 281.
Brachial Neuralgia. S. C. Little.—p. 285.
Rocky Mountain Spotted Fever. Case Report and Discussion and Therapy. G. S. Graham Jr.—p. 289.
Analgesia of the Brachial Plexus. T. E. Daly.—p. 294.
Volvulus of Small Intestine. F. H. Craddock Jr., F. Craddock and W. C. Browne.—p. 298.

American Heart Journal, St. Louis

33:269-412 (March) 1947

*Pulmonary (Venous) Air Embolism. T. M. Durant, J. Long and M. J. Oppenheimer.—p. 269.
Heart in Uremia. Electrocardiographic and Pathologic Study. R. Langendorf and C. L. Pirani.—p. 282.
Sequence of Ventricular Stimulation and Contraction in Case of Anomalous Atrioventricular Excitation. C. E. Kossmann and H. H. Goldberg.—p. 308.
Volume Elasticity of Aorta in Intact Dog. L. N. Katz, M. R. Malinow, B. Kondo, D. Feldman and N. Grossman.—p. 319.
Diagnosis and Treatment of Thromboangiitis Obliterans in Vascular Centers of Army General Hospitals. N. E. Freeman.—p. 332.
Influence of Vitamin B₁ Deficiency on Pyruvate Exchange of Heart. F. S. Randles, W. A. Himwich, E. Homburger and H. E. Himwich.—p. 341.
Pathology of Mitral Valve in Older Age Groups. J. Rosenthal and I. Feigin.—p. 346.

Pulmonary (Venous) Air Embolism.—Durant and his co-workers stress that pulmonary (venous) air embolism must be differentiated from the arterial form of air embolism. In the pulmonary form, air enters one of the systemic veins and is carried to the right side of the heart and pulmonary circulation and depends for its effects on mechanical obstruction of the outflow tract of the right ventricle. In arterial embolism the air gains entrance to the pulmonary venous channels and is propelled from the left ventricle to those systemic arteries which supply the superiorly located portions of the body. Since a small amount of air can effectively block a medium size artery, serious consequences may result when a few cubic centimeters of air enter the pulmonary vein and are carried into either the coronary or cerebral circulation or both. In the pulmonary, or venous, form the presence of air in the right ventricle produces a loud, churning sound, often readily heard without stethoscopic aid, which is known as the "millwheel" murmur. This murmur appears almost immediately after air has entered the venous circulation. As a result of the obstruction of the right ventricular outflow tract from the air trap which forms within it, the venous pressure rises to a considerable degree and cyanosis becomes apparent. There also appear manifestations of forward circulatory failure, namely a falling blood pressure, a rapid thready pulse, and syncope due to cerebral ischemia. The authors investigated the mechanism of death in pulmonary air embolism and means of preventing this occurrence. Death is due to circulatory obstruction resulting from an air trap in the right ventricular outflow tract. Displacement of the air trap by turning the body into the left lateral position may be life saving even after the right ventricular contractions have become feeble and death seems imminent.

American Journal of Orthopsychiatry, New York

17:191-380 (April) 1947. Partial Index

Age Patterning in Personality Development. Margaret Mead.—p. 231.
Group Psychotherapy in an Army General Hospital Relating to Civilian Readjustment. M. R. Friend and W. F. Sullivan.—p. 254.
Studies in Group Symptom Formation. Selma H. Fraiberg.—p. 278.
Must Individual and Group Psychotherapy Be Opposed? D. A. Shaskan.—p. 290.
Differential Dynamics of Activity and Interview Group Therapy. S. R. Slavson.—p. 293.
Group Therapy on a Children's Psychiatric Ward: Experiment Combining Group Therapy with Individual Therapy and Resident Treatment. Kathleen K. Stewart and Pearl L. Axelrod.—p. 312.
Fear of Desertion by Mother. Elizabeth Kundert.—p. 327.
Study of Thematic Apperception Tests of Psychotic Children. Mary Leitch and Sarah Schafer.—p. 337.
Structure of Dominance. P. Deutschberger.—p. 343.
Problem of Human Difference and Prejudice. S. H. Kaufman.—p. 352.

American Journal of Tropical Medicine, Baltimore

27:79-242 (March) 1947. Partial Index

Immunization of Ducks Against Malaria by Means of Killed Parasites With or Without Adjuvants. K. J. Thomson, J. Freund, Harriet E. Sommer and Annabel W. Walter.—p. 79.
Premature Rupture in Schizogony: Explanation for Multiple Infection of Red Blood Corpuscles with Malaria Parasites. S. G. Masillamini.—p. 107.
*Pacific Vivax Malaria in American Negro. F. A. Butler and J. J. Sapero.—p. 111.
Fuadin Therapy in 150 Cases of Schistosomiasis Mansoni, with Follow-Up Study of 70 Cases. R. Rodiguez Molina and H. Shwachman.—p. 117.
Parasitologic Study of 400 Soldiers Interned by Japanese. Ella Louise May.—p. 129.
Agglutination of Endameba Histolytica Cysts. R. L. Greif.—p. 131.
Preliminary Report on Field Experiments to Demonstrate Effectiveness of Various Methods of Malaria Control. J. E. Elmendorf Jr.—p. 135.
Radical Cure of Avian Malaria (Plasmodium Cathemerium) with SN 8557, A Naphthoquinone Derivative. W. Gingrich, Eugenia W. Schoch, Marjorie Schwab and Catherine C. Shepherd.—p. 147.

Pacific Vivax Malaria in American Negroes.—A group of American white and Negro troops stationed in a highly malarious area of the Pacific were studied to determine their comparative response to Pacific vivax malaria. There was no difference in the incidence of primary or recurrent malaria between the two races. Clinical and epidemiologic observations likewise indicated a similar behavior in regard to this disease. *Natives of this area manifested tolerance to the vivax malaria* of their neighborhood. This indicates that the American Negro lacks racial tolerance to the strains of vivax malaria encountered in the Pacific.

Annals of Allergy, Minneapolis

5:95-192 (March-April) 1947

Sympathectomy as an Antiallergic Measure. A. F. Coca.—p. 95.
Allergic Reactions from Handling Penicillin. Katharine B. MacInnis.—p. 102.
*Uses of Benadryl in Treatment of Certain Allergic Diseases of Children. G. B. Logan.—p. 105.
Antihistaminic Substances and Experimental Sensitizations. R. L. Mayer.—p. 113.
Does Routine Treatment of Asthma Need Revision? G. L. Waldbott.—p. 126.
Eczematoid Moniliid of Eyelids ("Candidid"). G. Ruiz Moreno.—p. 132.
Timothy versus Bermuda Grass. R. P. Wodehouse.—p. 137.
Chemical and Immunologic Basis of Oral Pollen Propeptan Therapy in Hay Fever. E. Urbach, G. Jaggard and D. W. Crisman.—p. 147.
Use of Crotalin in Prevention of Anaphylactic Shock in Guinea Pigs. D. E. Frank.—p. 156.

Benadryl in Allergic Diseases in Children.—Logan reports the results of the use of benadryl in the treatment of asthma, hay fever, vasomotor rhinitis and urticaria in 71 children. Six of 7 children treated for a single attack of asthma were considered benefited to some degree, and 16 of 17 treated for multiple attacks also obtained some benefit. Eleven of 13 children treated for hay fever obtained some benefit, as did 16 of 18 children treated for vasomotor rhinitis. Fifteen of the 16 children treated for urticaria obtained some benefit. Seventeen of the 71 children had as undesirable reactions, drowsiness, vomiting, nausea, headache, crabbiness, tachycardia or hematuria.

Administration of the drug to 6 of the 17 children was stopped because of the reaction. The doses ranged from 10 to 450 mg per day. This study indicates that benadryl is a valuable addition to drugs used in the symptomatic treatment of allergic diseases in children.

Annals of Surgery, Philadelphia

125:385-512 (April) 1947

Compound Injuries of Knee Joint. J. M Parker and J. J. Modlin —p 385.
Surgical Management and Late Complications of Gunshot Wounds of the Pelvic Viscera. G. B. Sanders and I G Hobbe —p 399.
*Studies on Acid Débridement of Burns. Marion B Sulzberger, A Kanof and R L. Baer —p 418.
Extremity Refrigeration Without Tourniquet Ligation in Cases of Acute Arterial Deficit. K. E. Livingston —p 431.
Primary Fibrosarcoma of Liver. T. A Shallow and I B Wagner Jr —p 439.
Simultaneous Repair of Peripheral Nerve and Soft Tissue Defects in Forearm. F. R Allbritten Jr —p 447.
Bacteriologic Study of Burn Wounds. J L Langohr, Cora R Owen and O Cope —p 452.
Sympathectomy for Sequelae of Trench Feet. A Kronturis —p 505.
Ligature Carrier for Vaginal Hysterectomy. R. Tauber —p 508.
Solitary Eosinophilic Granuloma of Rib. B G P Shafiroff and L Schemm —p 510.

Acid Débridement of Burns.—Sulzberger's group compared the pyruvic acid-starch paste method with other methods on symmetrically situated small standard third degree thermal and chemical burns on the flexor aspects of the forearm of male subjects. They found that treatment with pyruvic acid-starch paste and, subsequent to slough removal, with sodium sulfadiazine cream produced more rapid healing than (*a*) leaving the lesions untreated or (*b*) treatment under pressure bandage with 5 per cent sodium sulfadiazine cream or (*c*) with 5 per cent sulfadiazine cream or (*d*) with ⅕ per cent silver nitrate in petrolatum. The effects of acid débridement are not specific for pyruvic acid but appear to be dependent on the maintenance of the correct supply of hydrogen ions over a sufficient period. Among the other acids tested, 0.1 molar phosphoric acid, which has a p_H of 2.0 and which is a weakly dissociated acid, proved to be the best.

Archives of Pathology, Chicago

43:235-334 (March) 1947

Five Types of So Called Bronchial Adenoma. Histopathologic Study. M E Sang and R Meade Jr —p 235.
Primary Fibrosarcoma of Heart with Vertebral Metastasis. E Woll and A L. Vickery —p 244.
Histologic Changes Occurring in Hemopoietic Organs of Albino Rats After Single Injections of 2 Chloroethyl Vesicants. Quantitative Study. J E Kindred —p 253.
*Acute and Chronic Toxicity of Methyl Chloride. Histopathologic Observations. R C Dunn and W. W. Smith —p 296.
Histologic Comparison of the Brains of Vitamin A Deficient and Vitamin E Deficient Chicks. F B Adamstone —p 301.
Adamantinoma in the Tibia. B Halpert and H. P. Dohn —p 313.
Paracolon Bacillus Endocarditis of Pulmonic Valve Secondary to Infected Polycystic Kidneys. T. Robertson —p 318.
Hodgkin's Sarcoma of Uterus. H. N. Naumann —p 324.

Toxicity of Methyl Chloride.—Dunn and Smith review observations on seven species of animals which were exposed to concentrations of methyl chloride ranging from 4,000 to 500 parts per million for six hours a day six days a week until death. The eighth species studied was exposed to 11,000 parts per million for two hours a day on two consecutive days. On the basis of this study on several hundred animals, the majority mice, rats and guinea pigs, with fewer dogs, rabbits, cats, monkeys and goats, the only morphologic changes that appear to be a direct result of inhalation of methyl chloride are variable degrees of necrosis of the convoluted tubules of the kidneys in mice and rats, renal changes associated with hemoglobinuria in mice and occasional dogs, and a fairly constant but low to moderate amount of fatty metamorphosis of the liver and kidneys in the smaller species of animals studied. Clinically, pulmonary edema was noted frequently and appeared to be a direct result of the irritation due to inhalation of methyl chloride. Although focal myocardial changes and pneumonia were occasionally noted, they were often closely associated and did not appear to result directly from the inhalation of methyl chloride.

Archives of Surgery, Chicago

54:249-364 (March) 1947

Burned and Traumatized Hands. J. E Flynn —p 249.
Management of Colostomies in Fifteenth Hospital Center (England). R W. Bartlett —p 269.
Modified Technic for Total Gastrectomy. T. G Orr —p 279.
*Ruptured Intervertebral Disk in Cervical Region. Report of 20 Cases. I. V. Kristoff and G L. Odom —p 287.
*Streptomycin and Parachlorophenol in Surgical Infections. W S Brooke —p 305.
Progress in Orthopedic Surgery for 1945: VII. Tuberculosis of Bones and Joints —A DeForest Smith —p 316.
Id: VIII Infections of Bones and Joints. P Lewin —p 324.
Id IX Chronic Arthritis. J. G Kuhns —p 349.

Ruptured Intervertebral Disk in the Cervical Region.—Kristoff and Odom report 20 cases of ruptured intervertebral disk of the cervical region. Of the 20 cases 16 were those of pure root compression and only 4 were those of cord compression. The high percentage of root compressions in this series, as compared with those in the older reports of ruptured cervical disk, may be due to their earlier recognition. The pathogenesis may be divided into three states: (1) root compression, (2) unilateral cord compression with masked root compression and (3) bilateral cord compression with masked unilateral or bilateral root compression. A history of an initial and of repeated trauma was obtained in the majority of the cases. The diagnosis of a ruptured cervical disk is primarily clinical, and the history and subjective complaints are of maximal importance for arriving at an early recognition of the condition. Reproduction of the pain and paresthesias will be possible almost without exception as long as the syndrome is in the stage of root compression. After cord compression has occurred, myelography is the method of choice for arriving at a diagnosis of the level of the lesion. In the cases of lateral protrusions with root compression the operative results have been good. In the cases of cord compression recovery has not been always complete.

Streptomycin and Parachlorophenol in Surgical Infections.—In studies on streptomycin reported by Brooke the effect of streptomycin alone and its effect when mixed with agents such as sulfanilamide, penicillin, urea, tyrothricin, chloroazodin and parachlorophenol has been investigated. A mixture of streptomycin 500 micrograms per cubic centimeter and parachlorophenol 0.2 per cent was found adequate for the suppression of growth of all bacteria in vitro before treatment. In 10 cases infected burns, ulcers and wounds were treated locally with the streptomycin-parachlorophenol mixture as a solution or incorporated in various ointment bases, with generally good results. Streptomycin-resistant strains of the genus Pseudomonas developed in some instances after treatment, and the suggestion is made that perhaps local treatment with streptomycin should not be for long periods. The danger of development of resistant strains with prolonged use should not contraindicate use of streptomycin in selected cases. The injection of 200 micrograms of streptomycin per cubic centimeter into the periphery of some wounds seemed of benefit. It should be emphasized that these agents are only adjuvants and cannot replace surgical measures.

Gastroenterology, Baltimore

8:251-396 (March) 1947

Limitations of Roentgenology and Gastroscopy in Diagnosis of Diseases of Stomach. Analysis of 53 Proved Cases. E B. Benedict —p 251.
Value of Gastroscopy to the Clinician. C. M Jones —p 278.
Gastroscopic Differentiation of Gastritis from Carcinoma of Stomach. H J Moersch —p 284.
Metabolic Disturbances in Workers Exposed to Dinitrotoluene During World War II. L C McGee, H L Reed, T J Nereim, C. A Plume and A McCausland —p 293.
*Hepatitis Following Transfusion. J E Berk —p 296.
Epidemic Hepatitis. E Deutsch and H E MacMahon —p 311.
Amebic Liver Abscess in Service Personnel. L K Ferguson and R K. Anderson —p 332.
Observations on 543 Cases of Peptic Ulcer. F. F Radloff —p 343.
Study of Gastric Secretory Response in the Aged. H. A Rafsky and M. Weingarten —p 348.
Apparent Lack of Relationship Between Levels of B Vitamins in the Feces and Dietary Supplementation with Crystalline B Vitamins and Protein. M Freed, W. E Grundy, C R Henderson and G H Berryman —p 353.

Hepatitis Following Transfusion.—Berk reports 43 instances of hepatitis out of a total of 72 which are believed to have followed transfusion of blood and/or plasma. Hepatitis developing after transfusion of blood, plasma or serum appears to be related to both homologous serum hepatitis and infectious (epidemic) hepatitis The evidence for this relationship is still incomplete. Posttransfusion hepatitis is associated with the greatest mortality of any of the groups of hepatitis thus far described There is reason to believe that the more serious nature of transfusion hepatitis is ascribable not to the disease itself but to the impaired protein and nutritional status of the patients who require transfusions

Illinois Medical Journal, Chicago

91:109-164 (March) 1947

Remarks About Application of Betatron in Cancer Therapy H Quastler —p 119.
Conservative Renal Surgery. L W Riba.—p 122
Relation of Near Point Convergence to Squint Surgery P V. Carelli —p 124.
Plan of Cooperation Between County Health Departments and Tuberculosis Sanatorium Boards A. S. Webb and J W. Chapman —p 127
Brain in Infantile Cerebral Palsy H Josephy —p 128
Expression of Dosage in X Ray *and Radium Therapy* I F *Hummon Jr*—p *132*
Observations on Malnutrition in Santo Tomas Internment Camp E. F. Pearson —p 134
Modern Concept of *Heredity* *H Neuer —p 136*

91:165-216 (April) 1947

Illinois Hospital Survey *and Plan Progress Report* Henrietta Herbolsheimer —p 196
Hysterectomy in a Small General Hospital W C Scrivner and J D Belleville —p 199
Epidemic Diarrhea of the Newborn (Neonatal Enteritis) Clinical Picture and Prevention L W Sauer —p *201*
Nitrous Oxide Pentothal Anesthesia W A Conroy.—p 205

Journal-Lancet, Minneapolis

67:125-170 (April) 1947

Importance of Accurate Diagnosis in Tuberculosis W. J Bryan —p 126
Responsibility of Physician in Education of Tuberculous A A Pleyte. —p 128
Antibacterial Approach to Treatment of Tuberculosis H C Hinshaw —p *131*
Tuberculosis Among College Students P B Cornely and others —p 136
Incidence of Tuberculosis in Student Nurses E R Levine —p 142
Tuberculosis in Mexican Agricultural Laborers A W. Newitt and T M Koppa —p 146
Therapy of Hemorrhage R V. Ebert —p 149
Vitamin D_2 in Treatment of Cutaneous Tuberculosis J R Haserick *and H E Michelson —p 152*
Bronchogenic Carcinoma of the Lung E Mandell —p 157

Journal of Thoracic Surgery, St. Louis

16:99-206 (April) 1947

Pathology of Chronic Traumatic Hemothorax H. T Langston and W. M Tuttle —p 99
Treatment of Organizing Hemothorax by Pulmonary Decortication. W M Tuttle, H. T Langston and R. T. Crowley —p 117.
*Total Pulmonary Decortication Evolution and Present Concepts of *Indications and Operative Technic P C Samson and T. H. Burford* —p 127
Hemothorax and Empyema in Thoracic Center G N. J. Sommer *Jr* and W O Mills —p 154
*Pulmonary Cysts H J Moersch and O T Clagett —p *179*
Transthoracic Repair of Large Diaphragmatic Hernias Experimental Study T. C Chisholm —p 200

Total Pulmonary Decortication—*Samson* and Burford demonstrate the rationale of early decortication in selected patients with sterile organizing hemothorax, infected hemothorax and posttraumatic or hemothoracic empyema. The early restitution of pulmonary function has become a primary concern The crippling effects of chronic fibrothorax are preventable. Proper timing is of great importance in decortication. If attempted within ten to fourteen days in uninfected patients the peel is thin and friable. When performed too late the fibrous union between peel and pleura prevents a clean separation and the lung frequently is torn. From a technical standpoint the peel is most easily removed in from three to five weeks in uninfected patients and usually somewhat earlier when infection develops rapidly. The authors performed decortication on 125 patients and there have been no operative deaths.

Pulmonary Cysts.—Moersch and Clagett present 2 cases that would indicate that carcinoma may develop within a pulmonary cyst. The treatment of pulmonary cysts is entirely surgical. The type of operative procedure depends on the location, attachment, pulmonary involvement and secondary complications present. The essential point is to remove the cyst in its entirety.

Maine Medical Association Journal, Portland

38:49-72 (March) 1947

Present Role of Electroshock Therapy in Treatment of Mental Diseases. F. S *Broggi* —p 49.
Mental Health Program for Maine Margaret R Simpson.—p 54.
Pathology of Malaria B. Newman —p 58

38:73-96 (April) 1947

The Problem of Cancer of Cervix *T. C Bramhall* —p *73*
Gastrointestinal Bleeding Roentgenologic Considerations J. Spencer. —p *77*

Minnesota Medicine, St. Paul

30:225-344 (March) 1947

Acute Intussusception in Infancy and *Childhood*· Report of 58 Cases. F. H. Magney —p 257.
Financing Establishment of Small Hospital J A. Hamilton.—p. 261.
Short Commentary on History of Circulation Modern Addenda. F. A. Willius —p. 264.
Duodenal Diverticulum A. N Collins —p 268
Office Proctology. A. H. Borgerson —p. 272
Getting the Most from Pathologist. C. W Vandersluis —p. 276.
Kimmelstiel Wilson Syndrome A. J. Hertzog and W. D. Hayford. —p 280

30:345-456 (April) 1947

Medical Service Program in the Veterans Administration Hospitals. P. R Hawley —p 377.
Voluntary Prepayment Medical Care and Its Rural Aspects. L. A. Buie.—p 382.
Treatment of Persons Who Have Bronchial Asthma A. T. Laird. —p 386
Nitrogen Balance and Its Clinical Application. R. E. Hansen and E L. Tuohy —p 394
Observations on Management of Vasomotor Rhinitis J B. McBean. —p *399*
Orchiectomy and Hormones in Prostatic Carcinoma. P E Donohue. —p 403
Mycetoma or Madura Foot Report of Cases, Including 1 Case of Maduro*mycosis of Hand* H. W. Meyerding and J A. Evert *Jr*.—p. 407.

Occupational Medicine, Chicago

3:109-244 (Feb) 1947

Outline Analysis of Research Problems in Industrial Physiology. E Simonson —p. 109
Facts and Fallacies Concerning Exposure to Lead F E Wormser. —p. 135
Public Exposure to Lead. P. Drinker —p 145
*Clinical Significance of Hematologic Changes in Lead Absorption and Lead *Poisoning*. W. Machle —p 150
*Exposure to Lead. R. A. Kehoe —p 156
Industrial Hernias W. F. Lyon —p 172.
How Plant Medical Service Can Help Industry V. G Heiser —p 178
How to Procure a Plant Medical Service C E Noyes —p. 185

Hematologic Changes in Lead Poisoning.—Machle says that lead interferes with synthesis of protoporphyrin and alters the reticular substance but that there are no specific hematologic changes in lead absorption Two changes occur with sufficient frequency and of such an order of magnitude as to be useful diagnostic aids. These are punctate basophilia (or stippling) and reduction in hemoglobin Stippled cells are present in nonexposed, normal persons at times in numbers up to 7,000 per million In diseases other than lead poisoning (hepatic cirrhosis, pulmonary disease) and especially in the blood dyscrasias, stippled cell counts as high as 50,000 per million may occur without associated lead exposure Hazardous lead absorption usually but not always causes elevations in stippled cell counts Basophilic stippling becomes significant as regards lead absorption with employment of a uniform method for which normal ranges of values have been defined, when repeated frequently on groups and used as an index of trends in exposure and as supportive evidence in the diagnosis of lead intoxication Hypochromic anemia is even less specific than stippling, since it frequently results from environmental factors, undernutrition and disease. Moreover, the degree of reduction in hemoglobin is never great, and the mean levels for groups do not always relate well to the magnitudes of exposure

Exposure to Lead.—Kehoe summarizes the available information with regard to (1) the significance of the exposure of the public to lead, (2) certain aspects of industrial exposure to lead and (3) the problem of diagnosis The importance of factors such as particulate lead in the atmosphere and the lead content of food and beverages, particularly in the drinking water, are considered. The degree of risk associated with occupational exposure to lead is the joint function of the severity of such exposure and its duration The problem is to determine the limits of safe occupational exposure to lead by providing criteria which can be applied pragmatically and by determining the physiologic facts concerning the relative importance of duration versus intensity of exposure under a variety of conditions. There is now available specific and fairly precise knowledge of the physiologic background by which one can estimate the significance of lead exposure and absorption Persons do not get lead poisoning without having absorbed abnormal quantities of lead

Southern Surgeon, Atlanta, Ga.

13:233-298 (April) 1947

Pilonidal Cyst: Report of 17 Consecutive Cases Treated by Marsupialization S P. Todaro and R M. Prag—p 233
Behavior in Serum of Various Metals Used in Bone Surgery. L. W. Breck and J. R. Herz—p 240
Interinnominoabdominal Amputation of Lower Extremity with Indications for Extension of Its Use H. A Gamble p 248.
Skeletal Traction for Fractures of the Hand C H Wilson and J. R. Deitz—p 253
Spread of Carcinoma of the Stomach C N Gessler—p 264
Spontaneous Rupture of Uterus J T. Ellis, S W Windham Jr, T. K. McFatter and S G Lauchlis—p 270.

Surgery, Gynecology and Obstetrics, Chicago

84:513-890 (April 15) 1947 Partial Index

Interruption of Deep Veins of Lower Extremities in Prevention and Treatment of Thrombosis and Embolism A W Allen—p 519.
Cancellous Bone Grafts to Jaw. T G Blocker Jr—p 553
Modern Methods in Treatment of Fractures F W Ryerson—p 562.
The Surgeon and His Trust: Special Reference to Safe Conduct of Patient Through Operation W. H. Wangensteen—p 567
Clinical Uses of Streptomycin in Medicine and Surgery. H. Corwin—p 579.
Fluid and Electrolyte Balance C A Moyer—p 586.
*Ligation of Inferior Vena Cava in Thrombosis of Deep Veins of the Lower Extremities J. R. Veal, H. H. Hussey and E. Barnes—p 605.
Nutritional Preparation for Substandard Risk Patients R. L. Varco—p 611.
Complete Occlusion of Abdominal Aorta: Report of 2 Cases Diagnosed by Aortography. A H. Price and F B Wagner Jr—p 619.
Experimental Aortic Valvulotomy Preliminary Report H G Smithy and E F. Parker—p 625
Arteriovenous Fistula: Experimental Study of Influence of Sympathetic Nervous System on Development of Collateral Circulation R A Deterling Jr, H. E Essex and J. M. Waugh—p 629
New Operative Treatment for Elephantiasis F J Poth, S R Barnes and G I Ross—p 642
Indications for Portacaval Anastomosis Analysis of Cases A. H Blakemore—p 645.
Use of Vasodilation in Treatment of Venous Thrombosis A Ochsner.—p 659
*Anticoagulants in Venous Thrombosis and Prevention of Pulmonary Embolism G Murray—p 665
Experiments with Nonirritating Glove Powder C M Lee Jr and E P. Lehman—p. 689
Principles Involved in Surgical Therapy in "Encapsulated" Fibrosarcoma of Soft Tissue W. W Carroll—p 703
Pancreatic Reflux Deliberately Produced H Doubilet—p 710
Effect of Early Postoperative Rising on Recurrence Rate of Hernia J. B Blodgett and E J Beattie—p 716
*Use of Male Sex Hormone in Women with Breast Cancer. F E Adair—p 719.

Ligation of the Inferior Vena Cava in Thrombosis of Deep Veins of Lower Extremities.—Veal and his associates have performed ligation of the inferior vena cava in 30 cases of ascending thrombosis of the deep veins of the lower extremities. Of these 25 were due to phlebothrombosis, 3 to femoroiliac thrombophlebitis and 2 to thrombophlebitis in varicose veins There were 28 instances of pulmonary embolism before ligation of the inferior vena cava There were none following ligation There were 3 deaths 2 in cardiac patients and 1 in pneumonia. There has been adequate development of collateral venous circulation in all those who survived Women develop better venous collaterals than men.

Anticoagulants in Venous Thrombosis.—Murray uses the anticoagulants heparin and dicumarol. In his 400 postoperative cases in which an anticoagulant was administered, peripheral thrombosis did not occur and there were no cases of pulmonary embolism. In 371 cases of venous thrombosis in which treatment with anticoagulants was carried out with the objective of (*a*) preventing pulmonary embolism and (*b*) as treatment for the progressive thrombosis in the venous tree the results were satisfactory in that pulmonary embolism did not occur. The late effects of the thrombosis were less severe than in a control group The author used anticoagulants also in 149 instances of survival from an embolism Fifty-two of these were in a state of alarming shock. Striking improvement takes place in a few hours, once the effect on clotting time has been obtained. The pulmonary distress with dyspnea and pain and the embarrassment of heart action are diminished progressively in a short time, so that within a few hours there is a measurable change and within twenty-four to thirty-six hours the alarming symptoms have largely disappeared. It may take several more days before there is complete relief of all symptoms.

Androgen in Breast Cancer.—Adair has used testosterone propionate in approximately 200 cases of cancer of the female breast. He gives an intramuscular injection of 100 mg. three times a week, making a total dosage of 2,400 to 3,000 mg. Improvement is not to be anticipated when the cancer involves the soft tissue such as liver, lungs, brain and local skin recurrence, but striking improvement is obtained in most of the cases in which there is bone metastasis. It is probable that under the influence of testosterone the billions of cancer cells are "snowed under" by the copious deposit of calcium precipitates, especially in areas of bone destruction—a locking-in process where cell reproduction is difficult. In cases of widespread bony metastasis the use of testosterone propionate seems more efficacious and longer lasting than x-ray therapy. Although to date most work has been done on advanced breast cancer, recently work has been started on the early operable cases of breast cancer. Radical mastectomy is supplemented by large doses of testosterone implanted into the latissimus dorsi muscle or into the subcutaneous tissues near the wound at the time of the operation This combination has been used in 135 such cases to date. Two months after the operation further doses of testosterone will be implanted. The patient receiving testosterone therapy develops unpleasant masculinizing sequelae as evidenced by a deeper husky voice, hair on the face, pimples on the face and body—and an enlarged clitoris, but there is also usually, at least temporarily, a gain in weight, a feeling of well being, a loss of bone pain and a repair of the bone destruction. Testosterone may be employed on female patients with breast cancer at any age, while the estrogen therapy must be confined to patients of 60 years and older. Testosterone is not a cure for breast cancer; however, its effects are profound and gratifying

Tennessee State Medical Assn. Journal, Nashville

40:101-134 (April) 1947

*Bone Lesions in Gaucher's Disease. M Moore Jr and B L. Coley—p 101.
The Problem of Varicose Veins E M Stevenson—p. 107.
Some Unusual Complications of Diphtheria J. W. Johnson Jr.—p 114

Bone Lesions and Gaucher's Disease.—Reviewing 35 cases of Gaucher's disease in which bone was involved, Moore and Coley found that bone changes occurred before splenectomy in 24, without splenectomy in 5 and after splenectomy in 5 cases. In 1 case the bone changes were temporarily relieved after splenectomy X-ray therapy has been tried locally for relief of pain but has been of only limited and temporary value.

West Virginia Medical Journal, Charleston

43:93-122 (March) 1947

Renal Aspects of Hypertensive Disease A C. Corcoran—p. 93
Filarial Infections J E Ash—p 99
Organization of Mental Hygiene Interest in State and Its Effective Use G S Stevenson—p 104
Reconstructive Surgery in Army General Hospital H. A. Swart—p 107.

43:123-148 (April) 1947

Renal Neoplasms. Review of 48 Cases R M Bobbitt and I R. Harwood—p 123
Herniation and Exstrophy of Ileum in Newborn Incidental to Adherent Meckel's Diverticulum in Umbilical Area Case Report. W. Bronaugh.—p 126
Preventive Ophthalmology. D. Ketchum—p 130
Cooperation of Medical Profession in Vocational Rehabilitation Program F R Power—p 134

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Edinburgh Medical Journal

54:1-64 (Jan.) 1947

Ballantyne's Ghost. R. W. Johnstone.—p. 1.
Prolapsed Intervertebral Disk. G. L. Alexander.—p. 14.
Pneumoperitoneum in Treatment of Pulmonary Tuberculosis. R. Y. Keers, B. G. Rigden and P. Steen.—p. 30.
Sequelae of Tropical Disease: Skin Conditions. G. A. Grant.—p. 36.
Sequelae of Tropical Disease: Malaria. J. D. S. Cameron.—p. 40.
*Chemical Factors in Pernicious Anemia. H. K. King.—p. 50.

Chemical Factors in Pernicious Anemia.—According to King the knowledge of the chemical factors involved in pernicious anemia is extremely sketchy. Progress is blocked by the absence of an assay method other than that of human clinical trial—slow, difficult to perform, severely limited by the clinical material available and giving results of barely more than qualitative significance. The solution of the chemical problem waits *on the biologic. Idiopathic failure of the stomach to produce* an "intrinsic factor" which normally interacts with a dietary "intrinsic factor" prevents formation of the "liver factor," a *hormone which is stored in the liver and is essential for the* production of normal erythrocytes. Similar conditions may result from other causes, preventing normal supply of this hormone to the erythropoietic bone marrow tissue. The condition may be treated by oral or parenteral administration of concentrates of the hormone prepared from liver or by oral administration of stomach preparations which replace the deficient "intrinsic factor." The intrinsic (gastric) factor is a typically thermolabile protein, possibly a proteolytic enzyme. The nature of the intrinsic (dietary) factor is unknown. The liver factor is relatively thermostable; the available evidence suggests a polypeptide structure.

Journal of Pathology and Bacteriology, Edinburgh

58:609-784 (Oct.) 1946. **Partial Index**

Hyperplastic Callus Simulating Sarcoma in 2 Cases of Fragilitas *Ossium. S. L. Baker.—p. 609.*
*A Paraganglion Related to the Ductus Arteriosus. W. G. Barnard. —p. 631.
Pigmentary Changes in Familial Nonhemolytic Jaundice. H. J. Barrie. —p. 633.
Gliomata of Nose and Oral Cavity: Report of 2 Cases. A. B. Bratton and Sybil H. G. Robinson.—p. 643.
Cerebral Arteritis and Phlebitis in Pneumococcal Meningitis. H. Cairns and Dorothy S. Russell.—p. 649.
Basophilism and Carcinoma of the *Pancreas. A. C. Crooke.—p. 667.*
Primary Pulmonary Hypertension. J. R. Gilmour and W. Evans. —p. 687.
Salivary Adenoma and Adenolymphoma. O. C. Lloyd.—p. 699.
Hemolytic Icterus (Acholuric Jaundice), *Congenital and Acquired. J. F.* Loutit and P. L. Mollison.—p. 711.
Observations on Pulmonary Macrophage System. A. H. E. Marshall. —p. 729.
**Changes in Kidneys in* Carbon Tetrachloride Poisoning and Their Resemblance to Those in the "Crush Syndrome." W. W. Woods. —p. 767.

Paraganglion of Ductus Arteriosus.—Barnard says that a gland similar in structure to that of the carotid body was found when examining serial sections of the human ductus arteriosus. This gland appears to be additional to the aortic bodies and *similar glands so far described. Its position is constant* between the ductus arteriosus and the pulmonary artery. It is always in close association with nerves, some of which appear to be large *branches of the vagus.* It also has in its neighborhood nerve ganglion cells. It is itself very vascular. The functions of the gland are not known. From its structure it would appear that these would be similar to those of the carotid body, and it would be tempting to speculate as to its possible association with the closure of the ductus arteriosus. Although there are no recorded cases of tumors arising from this type of tissue in this situation, it is highly probable that it may at some time give rise to tumors in the mediastinum.

Changes in Kidneys in Carbon Tetrachloride Poisoning.—According to Woods, profound and sometimes fatal involvement of the kidneys in carbon tetrachloride poisoning has been recognized for some time. Three young men serving in the Navy became affected after dry-cleaning their clothes in a confined space with Pyrene obtained from fire extinguishers. It seemed clear at necropsy that the renal and not the liver damage was *responsible for death. In the liver, necrosis is* confined to the centers of the lobules; the remainder of the parenchyma *appears normal and there is evidence of early* regeneration about the *central foci. In the kidneys, however,* there is microscopic evidence of severe disturbance. The microscopic picture is indistinguishable from that found in the crush syndrome: the severe degeneration, with loss of cells and evidence of early regeneration in the second convoluted tubules and ascending limbs of Henle, the abundant casts seemingly derived from fragmented red corpuscles, together with the characteristic orange-brown or café-au-lait pigmented casts, are features common to the two conditions. It is suggested that the tubulovenous communications present may be largely responsible for the clinical and histologic features of this type of renal disease.

Lancet, London

1:*395-434* (March 29) 1947

Revision of Anatomic Curriculum at Birmingham University. S. Zuckerman.—p. 395.
Ascorbic Acid Metabolism of Bantu Soldiers. A. Kekwick, R. J. Wright. and A. B. Raper.—p. 397.
*Estimation of Penicillin in Serum: Use of Glucose, Phenol Red and Serum Water. A. Flemming and C. Smith.—p. 401.
Observations on Fibrinolysis: Experimental Activity Produced by Exercise or Adrenalin. Rosemary Biggs, R. G. MacFarlane and J. Pilling. —p. 402.
Ankylosing Spondylitis: Review of 25 Cases. A. M. G. Campbell —p. 406.
Stabilization of *Penicillin Solutions with Sodium* Citrate. L. Hahn. —p. 408.
Generalized Skin Sensitivity Following Local Application of Acriflavine: Report of a Case. J. M. Beare.—p. 410.

Estimation of Penicillin in Serum.—Flemming and Smith describe a micromethod in which a mixture of glucose, phenol red and serum water is used as the culture medium and a streptococcus as the test organism. The results obtained with this test have been checked against those of methods previously described and have been found to correspond. The authors have used this *method as a routine for some months and have found it the most* rapid and convenient.

1:435-470 (April 5) 1947

Clinical Approach to Preventive Medicine. P. H. Long.—p. 435.
*Calciferol in Tuberculosis: Review of 150 Cases of Lupus Vulgaris: Review of 21 Cases of Pulmonary Tuberculosis. P. J. Feeny, E. L. Sandiland and L. M. Franklin.—p. 438.
**Sand Fly Fever: Review of 664 Cases. J. Fleming, J. R. Bignall* and A. N. Blades.—p. 443.
Parahemophilia: Hemorrhagic Diathesis Due to Absence of a Previously Unknown Clotting Factor. P. A. Owren.—p. 446.
**Effect of Water on Gastric Motility: Test for Duodenal Ulcer.* A. W. Kay.—p. 448.

Calciferol in Tuberculosis.—Feeny reports observations on 150 patients with lupus vulgaris who were treated daily with 100,000 or 150,000 units of calciferol (vitamin D_2). The patients were under observation for four to twelve months. Local treatment was also given in 87 of the cases and general light baths in 14 cases. The success attained would have taken twice or three times as long before the introduction of calciferol therapy, but almost all patients were now independent of general light treatment. The treatment *appears to be increasingly efficacious* for the first nine months. The proportion of resistant cases was virtually the same as it had been before calciferol was used. The response of patients who had at any time been subjected to x-ray, radium or grenz ray treatment was the same as that in patients not so treated. Calciferol had no effect on lupus carcinoma. The incidence of intolerance was 23 per cent. When calciferol is given by mouth an alcoholic vehicle should be used. The addition of vitamin B was without effect on tolerance. The addition of calcium was without additional clinical benefit. In the second part of this report Sandiland and Franklin review their experiences with 21 tuberculous patients who were treated from twenty to fifty days with 25,000 to 100,000 units of calciferol and 3 mg. of vitamin B daily. *No clinical improvement* in the lung condition was noted in any patient. The 2 who had lupus in addition to pulmonary tuberculosis both showed immediate *improvement in the skin condition.*

Sand Fly Fever.—Fleming and his associates review observations on 664 cases of sand fly fever treated in two military hospitals in Italy. Other biting flies besides Phlebotomus papatasii may be vectors. The possibility of protracted infectivity should be examined. Evidence is adduced that persons who develop local skin reactions to the bites may have protection against the infection. The blood findings did not prove to be of much help in differentiating sand fly fever from other virus infections. The virus of sand fly fever has a special predilection for the meninges and should be considered in the differential diagnosis of meningitis in areas where the sand fly is prevalent. The fever is usually short and without sequelae.

Effect of Water on Gastric Motility in Duodenal Ulcer.—Kay points out that Carlson observed in 1916 that the ingestion of cold water inhibited gastric contractions. In 1943 Anderson confirmed this inhibition in normal subjects but found that in patients with peptic ulceration the cold water even stimulates gastric contractions. This abnormal response he called the "water reversal phenomenon." Kay reports the results of an investigation on the effect of water on gastric motor function. Ingestion of cold water inhibits gastric motility in normal subjects for about five minutes; hot water has a similar but briefer effect. In the presence of active duodenal ulcer gastric activity is either unaltered or even stimulated by the ingestion of water. The water test is therefore of value in the diagnosis of duodenal ulcer. There is evidence that the receptor point for this gastric response to water is in the duodenum. This duodenal mechanism is damaged by active ulceration but functions normally when the lesion has healed. The water test can therefore be used to provide evidence of healing.

Presse Médicale, Paris

55:161-172 (March 8) 1947

*Accidents of Intolerance of Penicillin. L. de Gennes, H. Bricaire, C. Laroche and J. Nelhil.—p. 161.
Catabolic Osteoporosis: Osteoporosis in Hyperthyroidism and in Cushing's Disease. A. Lichtwitz.—p. 162.
*Cholinesterase and Arterial Tension. L. Libbrecht.—p. 163.

Penicillin Intolerance.—De Gennes and his co-workers report 4 instances of penicillin intolerance in persons who had received 300,000 to 500,000 units of penicillin daily for ten days with a total dose of 2,600,000 to 3,000,000 units. The intolerance manifests itself in one of three types: In the first group a mild, transitory rise of temperature during the first days of treatment does not require discontinuation of the drug, and late rise of temperature occurs on the ninth day of treatment, which may increase if administration of the drug is not discontinued. In a second group there is a rise of temperature and eczema, while in a third type there is fever and erythroderma resembling serum disease. The majority of cases of intolerance occurred when a new lot of penicillin of Canadian origin was employed, suggesting that the nature and the mode of preparation may play a part in the intolerance. It was also observed that acute leukemia may be responsible for sensitization. These untoward reactions do not contraindicate the use of penicillin in the presence of a severe infection.

Cholinesterase and Arterial Tension.—Libbrecht determined the cholinesterase rate by means of Ammon's manometric method in 74 patients with hypertension who presented an average of 71 cmm. of carbon dioxide, while 150 persons without hypertension had an average of 60 cmm. Forty-two of the 74 patients had essential hypertension and an average of 71 cmm. On the other hand, patients with renal hypertension presented an average cholinesterase rate of 63 cmm., i. e. about the same as the general average of those without hypertension. The blood cholinesterase appears to be proportional to arterial tension, since the latter is conditioned by the vegetative tonus. The normal cholinesterase rate in the serum of patients with renal hypertension is related to their humoral etiology, while the increase in the cholinesterase rate of the patient with essential hypertension is related to their sympathicotonic nervous origin. Essential hypertension was considerably reduced by administration of neostigmine with doses previously employed only for myasthenia gravis.

Boletin de la Soc. de Cir. de Chile, Santiago

24:1-46 (July) 1946. Partial Index

*Cancer of Thyroid. M. Tapia de la Maza.—p. 29.

Cancer of Thyroid.—Tapia de la Maza observed in the course of eight years in a clinic of Chile 34 patients with cancer of the thyroid among 613 patients with thyroid disease. The group included 30 women and 4 men between 23 and 70. The tumor developed in 9 patients without a previous goiter, in 2 patients with goiter and in 2 patients with toxic adenoma. The tumor developed from a thyroid adenoma in 21 patients. The clinical symptoms appeared late. The most frequent were those of local compression and rapid enlargement of the thyroid. Four patients presented no symptoms. The treatment consisted in an extensive thyroidectomy followed by radium therapy.

Revista Medica de Chile, Santiago

75:1-74 (Jan.) 1947. Partial Index

*Tuberculomas of Central Nervous System. A. Asenjo, F. R. Perino, E. Garcia S. and A. Gallo B.—p. 1.

Tuberculomas of Central Nervous System.—One hundred instances of tuberculoma of the central nervous system were observed during a period of five years in a group of 287 tumor patients in the Instituto de Neurocirugia de Santiago. The diagnosis was verified in 65 cases by microscopic study after removal of the tumor or by a necropsy. Tuberculoma was solitary in 38 cases and multiple in 27. Poor economic and nutritional conditions in early adult life, tuberculosis in the family and a previous anergy causing disease constituted the etiologic factors. Symptoms of increased intracranial tension were present in all. Therapy consisted in the general regimen for tuberculous patients and either decompression or enucleation of the tumor, which was performed only when the tuberculoma was well delimited and surrounded by apparently normal tissue. In the 35 cases in which a necropsy was performed, the tumor was surrounded by tuberculous tissue 1 or 2 cm. in thickness. The microglia was in a state of acute proliferation and macrophagia, whereas the astroglia remained normal.

Wiener klinische Wochenschrift, Vienna

59:97-112 (Feb. 21) 1947. Partial Index

*Epidemiology of Tularemia in Lower Austria. F. Puntigam.—p. 103.
Increased Incidence of Autochthonous Malaria in Vienna. R. Wenger.—p. 106.

59:113-128 (Feb. 28) 1947

Surgery of Acute Pancreatitis. O. Bsteh.—p. 113.
*Tularemia in Lower Austria (concluded). F. Puntigam.—p. 116.
Early Treatment of Temporary Teeth as Necessary Expedient for Restriction of Dental Diseases. W. Demuth.—p. 120.
Provocative and Therapeutic Effects of Congo Red in Tertian Malaria. E. Keibl and H. Siedek.—p. 123.

Tularemia in Austria.—Puntigam discusses the epidemiology of two tularemia epidemics in the districts of Mistelbach and Gänserndorf of Lower Austria in 1936-1937 and 1945-1946. A considerable increase in the number of field mice was observed during dry summers. An epizootic developed in mice and caused their disappearance in November. From three to six weeks later first cases of the disease in man were reported. Only 1 out of 200 patients died in the first epidemic. There was no fatality among the 207 patients of the second epidemic. The observations suggest that mice act as a reservoir and main disseminators of Pasteurella tularensis. Additional investigations will probably demonstrate whether ectoparasites of these rodents or their excrements are responsible for the infection of the intermediary hosts, such as the field hares and wild rabbits. The question whether rats are to be considered as reservoir animals has not been answered. Infection in man is caused by contact with sick field hares or wild rabbits in the majority of cases. Other sources of infection such as domestic rabbits, chicken and roes (intermediary hosts) should be investigated. Transmission of Pasteurella tularensis to man by insects does not seem likely. Prevention of tularemia in animals and man can be accomplished only by a continuous radical campaign against mice and rats, even in times when there is no tularemia among field hares and wild rabbits.

per cent. It is pointed out however that, while the habits were recorded at the time of application, the higher mortality than usual may be due largely to a proportion of the applicants becoming immoderate drinkers at a later date. The death rate in this group was higher than the normal from cirrhosis of the liver, cerebral hemorrhage and pneumonia.

By comparison, whereas some members of the "moderate drinker" group were allowed policies at the normal rates of premium, another group, which consisted of those who drank to excess not oftener than three times a year but whose bouts lasted two or three days at a time, were considered as distinctly hazardous risks, with a relative mortality of 331 per cent.

SOUND DETECTION OVER HEART AND BLOOD VESSELS

To the Editor:—What is the intensity of the sound, in decibels, of (1) the radial pulse of a normal man, (2) that sound after it has been amplified by a conventional stethoscope and (3) the heart beat of a normal adult man at the apex?
Aaron Coblenz, M.D., New York.

Answer.—The decibel is defined as the power of the sound level which is just at the threshold of hearing. A 1 decibel variation is approximately the minimal change in the power level of sound that can be detected by the average human being.

1. It is apparent that the intensity of the sound of the radial pulse of a normal man is considerably below the threshold of hearing, and it probably is of the order of only a few per cent of 1 decibel in strength.

2. The conventional stethoscope does not amplify sound but merely acts to transmit the sound waves from the bell to the ear via rubber and metal tubing, thus reducing the normal loss in intensity due to distance, although certain distortions in the sound are introduced. Under ordinary conditions in the arterial tree, the sound induced by the phasic flow of blood is considerably less than 1 decibel. Whenever an artery is constricted, as with the application of the sphygmomanometer cuff, the turbulence of blood flow and the slapping of the arterial wall at the site of constriction create considerable noise and this is sufficient for utilization in the indirect measurement of the arterial pressure. Under these conditions as much as 35 decibels of power of sound level may be produced.

3. Several factors participate in the intensity of the sound heard at the apex: those involved in the psychology of hearing, in the adequacy of the ear for certain frequencies of sound, in the physics of sound transmission, and in the special properties of the thoracic tissues through which the sound is transmitted. There are many paths along which the heart sounds travel in the body before reaching the surface. A large percentage of the sound energy never reaches the surface because of viscosity, elasticity, density, spreading, reflection and refraction losses. The intensity of these sounds is maximum over the portion of the chest where the sound pursues a path of minimal attenuation. The greater the pressure with which the open stethoscopic chest piece is applied to the chest, the better is the response of the stethoscope, especially to higher frequency components. The diaphragm type of stethoscope reduces the intensity of the higher frequency components and may increase the intensity of certain low frequency components which are harmonics of the characteristics of the diaphragm. Finally, the human ear is a better detector of changes of frequency than of changes in intensity. It is apparent that the intensity of the sound at the apex may vary greatly with rather slight changes in conditions. The noise level at the apex as usually recorded via stethoscope is of the order of 20 to 35 decibels.

TESTS FOR PORPHYRINURIA

To the Editor:—Which is the more accurate and efficient test for the routine examination of urine for the presence of porphyrins: the B. E. S. test of Spies and Ellinger (described in Duncan "Diseases of Metabolism") or the test of C. J. Watson, using Ehrlich's reagent and a saturated solution of sodium acetate and concentrating the pigment in chloroform?
Clifford W. Atherton, M.D., Fairview, Ill.

Answer.—The B. E. S. test of Spies and Ellinger is not specific for porphyrin, since other urinary pigments will give a positive test, particularly urorosein. A positive test is thought to indicate malnutrition before the appearance of diagnostic evidence of a deficiency disease. However, the test is not in general use today.

The test for urinary porphobilinogen of Watson and Schwartz is a reliable test and is positive in cases of acute idiopathic porphyria. It is not positive in congenital idiopathic porphyria. The test is simple and can be carried out in any physician's office, but care must be taken to use exact proportions of the reagents. The technic is as follows:

1. The urine must be a freshly voided specimen.

2. Acidify with 10 per cent hydrochloric acid until a p_H between 3.5 and 5.0 is reached. (It should compare with p_H 4.5 of nitrazine paper but not give a blue color with congo red paper.)

3. Mix equal parts of urine and Ehrlich's reagent in a test tube.

4. If a red color is obtained, add an equal volume of a saturated aqueous solution of sodium acetate.

5. Add a few cubic centimeters of chloroform and mix thoroughly.

6. The red aldehyde compound of porphobilinogen remains in the aqueous fraction, while that of urobilinogen or indole is completely extracted by chloroform.

7. Ehrlich's Reagent: 0.7 Gm. of p-dimethylaminobenzaldehyde; 150 cc. of concentrated hydrochloric acid; 100 cc. of distilled water.

PENTOTHAL ANESTHESIA FOR CESAREAN SECTION

To the Editor:—Are there any contraindications to the use of sodium pentothal, with or without curare, for cesarean section? Will it interfere with the baby's respirations?
R. E. Speirs, M.D., Dodge City, Kan.

Answer.—Sodium pentothal in large doses produces results similar to older general anesthetic agents. Sufficient abolition of reflexes and relaxation of muscles usually required for abdominal operations is often accompanied by depression of breathing. Curare at present is considered a useful adjunct to anesthesia because it paralyzes skeletal muscles. The dose necessary to relax the muscles of the abdominal wall completely is just short of the dose which paralyzes the muscles of respiration. Hence both these drugs, when used to produce satisfactory conditions for cesarean section, must include the risk of decreasing the ventilation of the lungs or of stopping respiration altogether. If the anesthetist is clever and experienced enough to administer adequate and proper doses of a combination of pentothal and curare without decreasing unduly the mother's respiratory exchange, the method might be justifiable. However, few physicians would feel confident that they could thus produce sufficient anesthesia without risking, at least in an occasional case, secondary depletion of the oxygen supply and an accumulation of carbon dioxide in the child before birth. Both drugs can be expected to pass through the placenta to the fetal circulation. In sufficient dose, the initial breath of the newborn might be delayed or prevented. If these drugs are used, artificial respiration with oxygen should be instantly available and applied promptly when breathing becomes inadequate either in the mother before birth or in the newborn child. There are many safer and better methods of producing anesthesia for this operation.

MYASTHENIA GRAVIS AND PREGNANCY

To the Editor:—A primipara secundigravida aged 28 has myasthenia gravis. Please discuss (1) the antepartum management, (2) the management of delivery with particular reference to medications contraindicated and anesthesia and (3) the complications to be expected.
M.D., Massachusetts.

Answer.—1. Except for the addition of neostigmine therapy antepartum care for women with myasthenia gravis does not differ from the care given other women. Before the use of neostigmine pregnancy was frequently terminated, but this is not necessary if the patient can be controlled with neostigmine. Generally the effect of pregnancy on myasthenia is favorable. Most women experience definite remission in symptoms, and if relapses occur they are mild.

2. Management of delivery is the same as in other women. The same drugs and anesthetics may be used, but the fewer that are administered the better. For actual delivery, local anesthesia should be tried because it is the least dangerous of all anesthetics.

3. Complications need not be expected, because pregnancy, labor and nursing do not affect the course of the disease unfavorably under present conditions of treatment. There is an excellent article on this subject by H. R. Viets, R. S. Schwab and M. A. B. Brazier in The Journal, May 16, 1942, page 236.

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DIAGNOSIS OF MYASTHENIA GRAVIS IN PATIENTS WITH. DYSPHAGIA

HENRY R. VIETS, M D
Boston

Dysphagia is one of the commonest symptoms of myasthenia gravis. Moreover, it may often be the presenting symptom, some difficulty in swallowing being the first sign of abnormal muscular fatigue. The defect in the swallowing reflex is due to weakness of the buccopharyngeal muscles, usually with relaxation of the constrictors. Both the feeble power of the reflex act, as shown by the slowness of movement, and the relaxation, with dilation of the pharyngeal tube, are easily demonstrated by roentgenoscopic examination. The tightening of these muscles and the increased rate of swallowing, after stimulation by an appropriate amount of neostigmine ("prostigmine") methylsulfate, was observed and recorded in cases of myasthenia gravis by Schwab and Viets[1] in 1941. They suggested that this method of examination might be used as a test for the disease, and the present communication is in effect a reinforcement of the observations of 1941 in the light of five more years of experience.

DYSPHAGIA AND DYSARTHRIA IN MYASTHENIA GRAVIS

In the last eleven years, 175 cases of myasthenia gravis have been studied at the Massachusetts General Hospital. An analysis of this entire group indicates that dysphagia and dysarthria occur at the onset as the first symptom in about 20 per cent of the patients. Thirty-five of the 175 patients had one or both of these symptoms (fig. 1). Dysphagia is commoner than dysarthria, although usually the two occur together. The dysarthria, indicated by nasal speech, seldom occurs alone and is to be considered as a minor symptom. The defect is in the soft palate, not in the vocal cords. Dysphagia, on the other hand, often may be present without any dysarthria.

In addition to being the first symptom in myasthenia gravis, dysphagia may occur in the course of the disease, at which time it is usually indicative of an exacerbation. Dysphagia is one of the more important symptoms, moreover, from the point of view of prognosis. When present the patient may lose weight rapidly and be subjected to choking or coughing spells. As a symptom, therefore, dysphagia is of more importance, except for dyspnea, than, for instance, ptosis and diplopia or general muscular weakness.

The first symptoms of myasthenia gravis occur at all ages, but the disease begins most frequently between the ages of 20 and 30 (fig. 2). Fifty-two of the 175 cases studied began during this decade. It is also relatively frequent between 60 and 70 years of age. From the point of view of the laryngologist, this later period becomes of considerable importance, for between ages 60 and 70 is the period when other forms of dysphagia, particularly those due to intrinsic degenerative diseases of the central nervous system and obstruction caused by tumor formation, are commonest. Bulbar palsy occurs at this age of life.

Myasthenia gravis, moreover, may occur in patients over 70, and I have had 10 such instances. In the younger age groups, 4 have occurred before the age of 10 and 26 between 10 and 20 years of age. There is a scattering of cases between 30 and 60 years, and no decade of life is free from examples of the onset of this disease, save possibly the ninth.

Of all the symptoms, ptosis and diplopia are the commonest, occurring in 43.4 per cent of the 175 patients who were examined. Next in frequency is general weakness due to involvement of the arms and legs. This was found in 34.2 per cent. Weakness of the muscles of the neck occurs in 2.3 per cent. Dysphagia and dysarthria account for the remaining 20.1 per cent (fig. 1).

The disease, formerly considered fatal in a large percentage of cases, is now considerably controlled by the use of neostigmine either given orally or by injection. In this series, 35 patients have died in the course of eleven years, a mortality of 20 per cent. Before the use of neostigmine the death rate, over a similar period, would have been about 75 per cent.

The progress of the disease offers great variability. The symptoms of some patients are fixed for long periods of time. On the other hand, there is not infrequently a tendency toward progress by remissions and relapses. Thirty-one per cent of the patients have shown some tendency toward remission, and 14 per cent of the patients have had complete remissions during the period of observation. Spontaneous remissions may occur, no matter how severe the symptoms of the patients may be during the height of their relapse.

The symptoms of myasthenia gravis are entirely due to weakness of the muscular action. Except for the act of swallowing, the muscles involved are those concerned with voluntary movements. The muscle dysfunction is due to fatigue, with normal action usually possible after a period of rest. There are indications that the abnormal fatigue is caused by a chemical disturbance in the acteylcholine-cholinesterase balance

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From the Myasthenia Gravis Clinic, Massachusetts General Hospital.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946

[1] Schwab, R S., and Viets, H. R.: Roentgenoscopy of the Pharynx in Myasthenia Gravis Before and After Prostigmine Injection, Am J. Roentgenol **55**: 357 (March) 1941.

at the myoneural junction or possibly in the muscle itself. Whatever the mechanism giving rise to the symptoms, it is now accepted that neostigmine has an unusual effect in overcoming the excessive fatigue of muscular motion. When the drug is taken, either by mouth or parenterally, the response is often prompt and may be complete. As the effect of neostigmine on other diseases is either slight or nil, the drug is useful as a diagnostic agent.

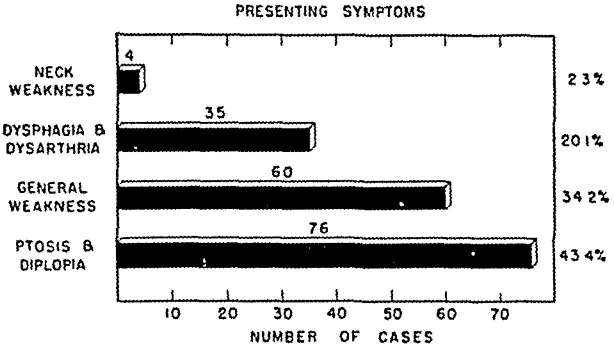

Fig. 1.—The first symptoms of myasthenia gravis in a group of 175 cases. Some defect in swallowing or speaking occurs in one fifth of the cases.

THE NEOSTIGMINE TEST

The neostigmine test may be carried out as an office procedure, but if the patient is seriously ill, the test is usually performed in the hospital. If the patient has not been taking neostigmine in any form and appears for diagnosis because of dysphagia, care should be taken in doing the test for two specific reasons. First, patients not suffering from myasthenia gravis may have a general reaction to the neostigmine and second, patients with bulbar palsy or other conditions giving rise to permanent muscular weakness may find it difficult to swallow the barium paste without choking.

For an adult, 1.5 mg. of neostigmine methylsulfate and 0.6 mg. of atropine sulfate are combined in a 1 cc. ampule, known as the diagnostic ampule. This special form of neostigmine should not be confused with the ordinary treatment ampule of neostigmine methylsulfate, 1 cc. of which contains 0.5 mg. of a 1:2,000 solution. Experience has shown that the amount of neostigmine in the diagnostic ampule is necessary in order to obtain a satisfactory test in an adult. The atropine is added to overcome the stimulation of the parasympathetic system. Ampules of atropine sulfate should be at hand to inject promptly provided the patient shows symptoms of severe parasympathetic stimulation, such as intestinal cramps, diarrhea, cold sweats or collapse. Most patients with myasthenia gravis are relatively free from reactions of this type. No patient is known to have died as the result of an injection of neostigmine as a diagnostic test, but the results may be disturbing to a roentgenologist who is not prepared to handle the situation. A violent reaction to neostigmine is almost certain evidence that myasthenia gravis is not the correct diagnosis.

If the barium paste is thick the patient may have considerable difficulty in swallowing it, particularly if suffering from permanent paralysis such as occurs in bulbar palsy. A thinner mixture should be used under these circumstances.

If the patient is taking neostigmine, the dosage of the drug should be omitted for at least twelve hours before the test is performed. In severe cases, only partial omission of the medicament may be possible. The examination is then made in the usual manner by observing the patient, ordinarily in the upright position, under the fluoroscope as the barium paste is swallowed. If the barium is retained in the pharynx a plate may be taken, thus recording the amount of retention. After the preliminary studies have been made, the patient is given a subcutaneous injection of the contents of the diagnostic ampule. In twenty to thirty minutes, reexamination is made following the same procedure.

ILLUSTRATIVE CASES

In most cases of myasthenia gravis, patients with dysphagia as the presenting symptom will respond to the neostigmine test completely. However, in mild cases the retention of barium in the pharynx before injection may not be pronounced, particularly if a thin solution of barium paste is used. After the injection the barium is completely removed, except for a minimum amount often left in the pyriform sinuses. This should be evacuated in the average patient after the second and third swallowing. In most cases there is no retention. No other disease except myasthenia gravis gives rise to such a complete return of normal function of the swallowing reflex after the appropriate amount of neostigmine is given and the patient is allowed to absorb the medicine over a period of twenty to thirty minutes. An example of this type of reaction which would be considered a positive neostigmine test, completely diagnostic of myasthenia gravis, is given in the following case history:

Case 1.—*History.*—H. R., a man aged 34, first noticed generalized muscular weakness with difficulty in chewing and swallowing in March, 1942. On examination two weeks after the onset there was ptosis of one eyelid, diplopia and inability to wrinkle the eyebrows or to close the eyes tightly. When his arms were extended in front of him they dropped in a few seconds. He fell when attempting to walk up some stairs. Because of the weakness of the muscles of the neck, he had difficulty in holding up his head. The act of swallowing was slow and labored, but there was no regurgitation of fluids through his nose. His jaw tended to hang half open, and his speech was slurred.

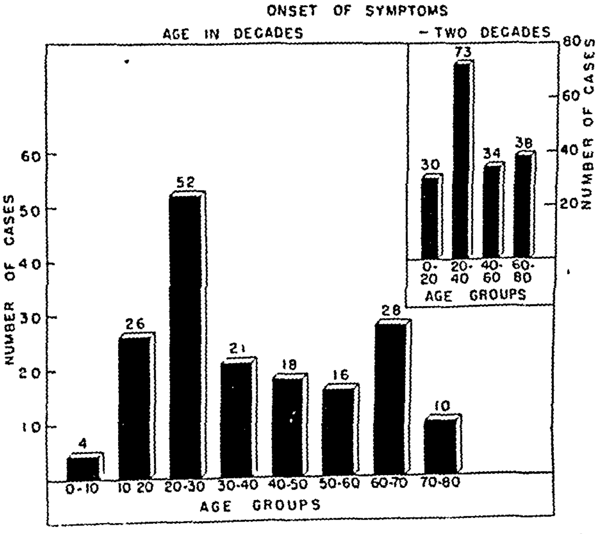

Fig. 2.—The age of onset in 175 cases of myasthenia gravis, by decades and double decades. Over 40 per cent of the group had their first symptoms between 20 and 40 years of age, but the disease began in all decades.

Roentgen Examination (March 19, 1942).—A swallow of barium was given and roentgen examination showed slight filling of the pyriform sinuses with little delay in the passage of the barium through the pharynx and upper esophagus (fig. 3 *A*). After injection of the neostigmine, the swallow was repeated and showed rapid passage of barium, with no filling of the pyriform sinus (fig 3 *B*). Examination of the swallow of barium before and after the injection of neostigmine showed definite changes in the muscular movements of deglutition.

Subsequent Clinical Course.—The patient responded well to neostigmine bromide taken at appropriate intervals by mouth. A thymectomy was performed April 21, 1943, and a benign thymoma was removed. The condition of the patient improved slightly immediately after operative intervention, but he subsequently had increasing symptoms and died of respiratory paralysis Oct. 15, 1944, about a year and a half after the operation. There was no thymic tissue present at autopsy.

In severer cases the response to the diagnostic ampule of neostigmine may not be so complete. Two of the ampules may be used, but usually one is sufficient. The roentgenologist should guard against making a mistaken report of "no improvement" when insufficient neostigmine has been employed. It is always better to repeat the test with an increased amount of neostigmine, if there is reasonable doubt in the mind of the examiner, and not accept an inconclusive result. If the barium paste is moderately thick no harm should come to the patient by repeating the test even at the same sitting.

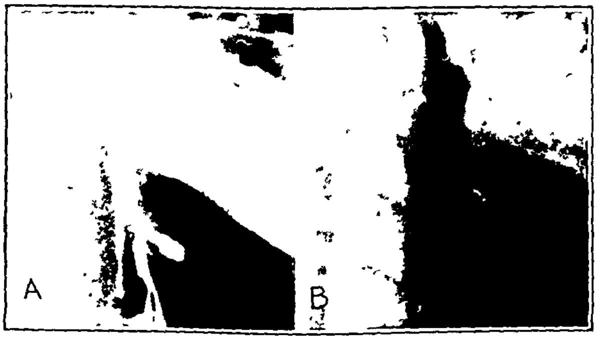

Fig. 3 (case 1).—*A*, appearance of the pharynx, showing slight retention of barium before injection of a diagnostic ampule of neostigmine methylsulfate. *B*, appearance of the pharynx after the injection of a diagnostic ampule.

Case 2.—*History.*—J. K., a woman aged 29, had experienced difficulty in swallowing and talking for about a month before being seen in December 1943 She had also noticed about the same time some intermittent weakness of the little fingers. On examination, she was unable to swallow any solid food and could swallow only a slight amount of liquid, without fatigue or regurgitation. Her voice was nasal in type to a sufficient degree that her speech was difficult to understand. Saliva tended to accumulate in her mouth. Ptosis of the left eyelid was present but no diplopia Some weakness of her legs was noticed in climbing stairs

Roentgen Examination (Dec. 30, 1943).—Before the injection of neostigmine roentgen examination showed decided retention of barium in the valleculae and pyriform sinuses (fig. 4 *A*). There was considerable difficulty in swallowing. The hypopharynx ballooned out considerably. After administration of neostigmine methylsulfate, the swallowing act was greatly improved and the tonus of the hypopharynx approached that of a normal person (fig. 4 *B*).

Subsequent Clinical Course.—The patient has been maintained reasonably well on a regimen of neostigmine bromide by mouth, supplemented with some injections of neostigmine methylsulfate, particularly before her meals. It was necessary for her to be hospitalized in 1945 in order to adjust her medical regimen. When she was properly maintained on an adequate dosage of neostigmine, the patient gained 10 pounds (4.5 Kg.) in a few weeks.

Occasionally, the improvement after injection may be insufficient to make a report of a positive test. Although the retention may be considerable, the increased rate of the swallowing reflex, as noted under the fluoroscope, is usually the most dependable observation. Much of the barium, moreover, may be removed on a second or third attempt to swallow, often an impossible act prior to the administration of neostigmine. A normal swallowing reflex, in spite of considerable retention of the barium, is illustrated by the following case:

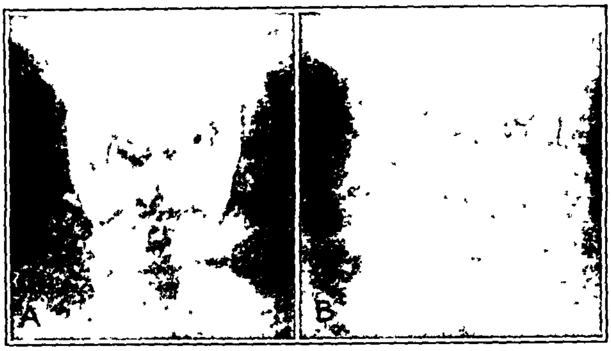

Fig 4 (case 2).—*A*, anterior posterior view of the pharynx, showing the accumulation of barium in the valleculae and pyriform sinuses. *B*, appearance of the pharynx about twenty minutes after injection of the diagnostic ampule.

Case 3.—*History.*—B. C., a man aged 60, had increasing difficulty in swallowing for a period of two months prior to being first seen, Sept. 2, 1943. During this period he had lost 25 pounds (11 Kg.), and about six weeks before entering the hospital he had given up his position as a grocery clerk. He had no regurgitation of liquids through his nose, and he had not vomited. In addition to the difficulty in swallowing the patient had noticed bilateral ptosis of his eyelids and his speech had become nasal in character. There was an increasing tendency for secretions to accumulate in his mouth and pharynx. There also developed a slight weakness in his right leg with a tendency toward foot drop. On examination, there was bilateral ptosis, his speech was nasal in character and chewing and swallowing of solid foods was impossible. He could ingest a slight amount of liquid. The jaw sagged, and there was considerable weakness in the facial muscles, particularly around the mouth. Diplopia was not present.

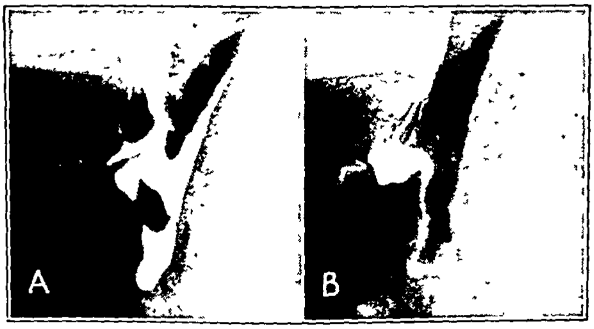

Fig 5 (case 3).—*A*, retention of barium in the pharynx in a patient with well defined dysphagia due to myasthenia gravis *B*, effect of the injection of a diagnostic ampule, showing partial improvement in the swallowing reflex.

Roentgen Examination (Sept. 15, 1943.)—A large amount of barium was retained in the pharynx prior to an injection of a diagnostic ampule of neostigmine (fig 5 *A*). Most of this disappeared twenty minutes after the injection, and the patient's swallowing reflex became relatively normal (fig. 5 *B*).

Subsequent Clinical Course.—The patient was maintained on large amounts of neostigmine bromide by mouth, supplemented by injections of neostigmine methylsulfate before the noon and evening meal. He learned to give the injections himself. Slow but steady improvement was noticed, and within a period of a month he was able to omit one injection a day, keeping his oral medication at a level of twelve tablets in twenty-four hours. He gained 10 pounds (4.5 Kg.) in two months, and at the end of three months was able to give up the injections entirely and gradually reduce the amount of medicine by mouth. Six months after the onset the patient was in a state of complete remission, having no symptoms and not needing any medicine either by mouth or injection He was able to undergo a minor surgical operation at the end of one year and has remained well for a period of slightly over two years

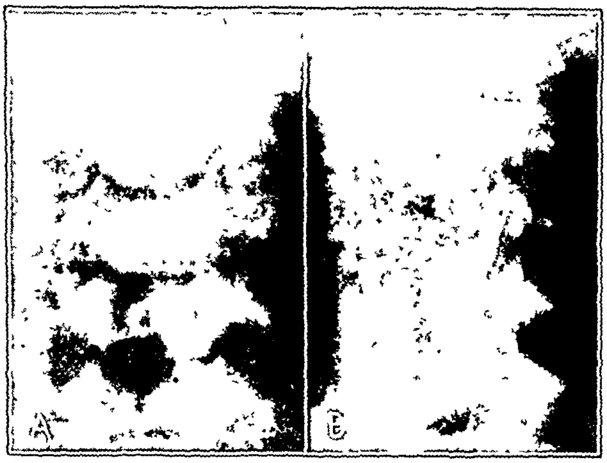

Fig 6 (case 4) —*A*, normal swallowing reflex without retention of barium, in patient well maintained on oral neostigmine *B*, patient without oral neostigmine for thirteen hours, showing defective swallowing reflex with retention of barium

The test may be used as a check of the efficiency of treatment in patients with myasthenia gravis who are being maintained on oral neostigmine. Ordinarily this is not necessary or even desirable, but occasionally one may wish to find out whether the swallowing reflex is still affected even though the patient is free from symptoms. By omitting the oral medication for twelve to twenty-four hours, the test can be done exactly as it is performed as a diagnostic measure. In the following case this was the method used:

Case 4.—*History*—M S., a woman aged 30, began to have dysphagia about three years before her admission to the hospital in February 1943. Subsequently she noted the development of ptosis, diplopia, dysarthria and some general weakness. She was quickly adjusted to a schedule of oral neostigmine. Under treatment she was free from symptoms Her scheduled intake of medicine was omitted for thirteen hours, as a test of its efficiency. At the end of the period the patient had pronounced difficulty in swallowing and her speech was nasal in character.

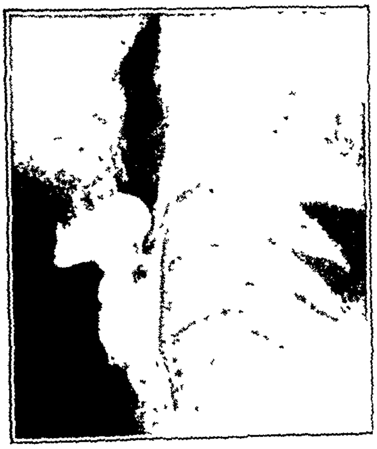

Fig 7 (case 5) —Pronounced retention of barium, just prior to a spontaneous remission, with complete recovery in four months

Roentgen Examination (Feb 4, 1943).—While the patient was well adjusted on oral medication, she was given a swallow of barium and roentgen examination showed no delay in the passage of the barium and *no filling* of the pyriform sinuses (fig. 6 *A*).

Reexamination of the patient who had not taken medicine for thirteen hours showed pronounced difficulty in swallowing. The patient choked during the examination and retained barium in the pyriform sinuses (fig. 6 *B*). Twenty minutes after injection with neostigmine the patient again swallowed in a normal manner and barium was not retained.

Subsequent Clinical Course.—After she left the hospital, the patient was well maintained on oral neostigmine for about two years. She then relapsed and died of respiratory paralysis in another hospital on Aug. 24, 1945.

Although dysphagia may be decided and the patient may show other serious signs of myasthenia gravis, recovery may be rapid soon after the diagnosis is made. The dysphagia, with pronounced retention of barium, may disappear completely in a few months. An example of such a spontaneous remission is as follows:

Case 5.—*History*—C. Y., a woman aged 72, began to have dysphagia six months before entering the hospital on July 18, 1945 Prior to the actual onset, she had noticed intermittent weakness of her pharynx and slight difficulty in swallowing of a transient character for a period of nearly five years The last part of her meal was often difficult to ingest, but her symptoms did not become decided until December 1944. Solid food tended to be retained in her pharynx, and when she attempted to wash it down with fluids, the fluid would be regurgitated through her nose She never had dysarthria In a year's time, she lost about 15 pounds (6 8 Kg.) in weight.

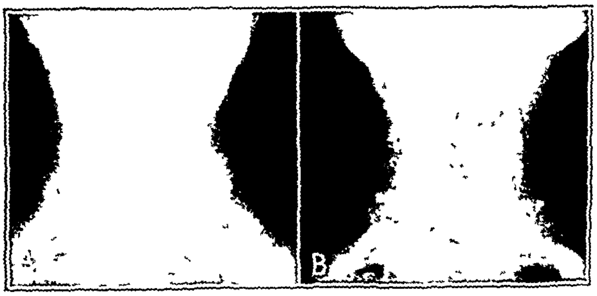

Fig 8 (case 6).—*A*, decided retention of barium in the pharynx and pyriform sinuses in a case of myasthenia gravis with dysphagia *B*, almost complete removal of barium from the pharynx, but with some retention in the pyriform sinuses, after injection with neostigmine in the diagnostic test

On examination, the chief difficulty was in swallowing.

Roentgen Examination (July 18, 1945).—There was well defined paralysis of deglutition, and barium was retained in the pyriform sinuses and valleculae in large amounts (fig. 7). After a diagnostic test with neostigmine, the swallowing reflex was much improved

Subsequent Clinical Course.—The patient rapidly advanced to a spontaneous remission of her symptoms. She only took a small amount of neostigmine for a few days. Her condition improved rapidly, however, and her tablets were soon omitted At the end of about a month she was able to swallow in a normal manner. When seen in November 1945, four months after the testing, she showed no dysphagia and was not taking any medicine.

Not infrequently, the cases of patients suffering from dysphagia as the chief symptom are diagnosed as bulbar palsy. It is rare, however, to have bulbar palsy without atrophy and fibrillations easily observable in the tongue and posterior pharyngeal muscles. Moreover, in this disease the speech is commonly of the "hot potato" type and not the typical nasal speech heard in patients with myasthenia gravis. Patients with myasthenia gravis are unlikely to have dysphagia as the only symptom if a careful history and examination are conducted. One usually finds weakness of the masseter muscles, transient diplopia and ptosis and some evidence of general muscular weakness. Patients, however, may go many months or even years with their disease undiagnosed. The diagnosis may be surprisingly easy when the patient's swallowing reflex is studied before and after an injection of neostigmine. This is illustrated in the following case:

Case 6.—*History.*—H. G., a man aged 71, was first seen in March 1946. Ten months before examination he first noticed weakness of the muscles of his neck, and later, diplopia. Three months after the onset, there was weakness of the masseter muscles and it was necessary for him to hold up his chin with his hand. About the same time dysphagia and dysarthria developed. At times there was great difficulty in swallowing and fluids were regurgitated through his nose.

Roentgen Examination by Dr. A. S. MacMillan (March 28, 1946.)—Roentgen examination revealed decided stasis in the pharynx with retention of barium in the pyriform sinuses before the injection of neostigmine (fig. 8 *A*) After the test the condition of the patient was greatly improved, although some retention was still evident (fig. 8 *B*).

Subsequent Clinical Course.—The patient was adjusted on a schedule of oral neostigmine and improved quickly. Three months after the examination the patient was well maintained on oral medicaments and was almost free from symptoms.

Of the cases chosen to illustrate the diagnostic test it will be noted that 3 of the patients were over 60 years of age and 2 of them over 70. It is in this group, usually first seen by the laryngologist, that the diagnosis is most likely to be missed, for it is the age when degenerative or neoplastic disease is most frequent. The matter should be resolved by the neostigmine test. The test has never been found to be positive in any patients in whom there was reasonable doubt in regard to the diagnosis of myasthenia gravis, and seldom will the test be negative in this disease if the patient has dysphagia as one of the symptoms and is not fully adjusted on a regimen of oral medication.

CONCLUSION

1. If dysphagia is present as a symptom of myasthenia gravis, the response to neostigmine observed under the fluoroscope when the patient is seen in the act of swallowing provides a diagnostic test of considerable value.

2. In no other disease will swallowing be improved as the result of the test. In myasthenia gravis patients with dysphagia, provided they are not fully adjusted on oral neostigmine, will show a prompt and unequivocal response.

3. The amount of the drug to be used is provided in a diagnostic ampule which contains 1.5 mg. of neostigmine methylsulfate and 0.6 mg. of atropine sulfate. The injection is given subcutaneously, and observations are made twenty to thirty minutes later.

4. In a positive test the pyriform sinuses are usually emptied and there is no retention in the valleculae or along the walls of the pharynx. The tone of the pharyngeal muscles may be improved, as seen by increased constriction.

5. A medium thin barium paste should be used, not so thick as to be normally retained either by the pyriform sinuses or along the walls of the pharynx.

6. The response in patients not suffering from myasthenia gravis is nil. These patients, moreover, may have considerable general reaction to the neostigmine due to parasympathetic stimulation. In order to avoid this, atropine sulfate is added to the diagnostic ampule. Certain patients may be particularly sensitive to the neostigmine, and, if so, additional amounts of atropine sulfate should be available at the time of the test.

7. This test for dysphagia is part of the general neostigmine test for myasthenia gravis, but it is particularly valuable in making the diagnosis because of the absence of voluntary control and the clear method of observation by fluoroscopic examination.

ABSTRACT OF DISCUSSION

Dr. Henry W. Newman, San Francisco: Dr. Viets has seen enough cases that he can determine the percentage that have various symptoms. He has stated that in approximately 20 per cent of the cases dysphagia may be the symptom with which the patient presents himself. In other manifestations of myasthenia it is frequently easy to determine by observation the part under stress of function. The myasthenic action of tiring out is quite apparent. Myographic studies can be made and the difficulty easily determined. When the difficulty is in swallowing, frequently there is a great deal of trouble in demonstrating this difficulty, except by the roentgenographic method. This is something which should be done in all patients in whom the diagnosis is not at once apparent. Dr. Viets stated that this enables one to differentiate between myasthenia and degenerative diseases of the nervous system, such as progressive bulbar palsy. The test is also of value in differentiating between various functional nervous complaints, such as hysteria, in which the patient frequently complains of difficulty in swallowing. "There is a ball in my throat which won't go down." This may be purely a hysterical symptom or it may be a presenting symptom of myasthenia gravis. If the person shows difficulty in the swallowing mechanism roentgenographically and this difficulty is cleared up with neostigmine, the physician knows he is not dealing with a neurosis but with myasthenia gravis. Dr. Viets has shown that these patients will get well or relatively well spontaneously or go into a remission which may last a matter of years. One must always bear this in mind in evaluating the reports which have been made in regard to removal of the thymus in this condition. Certainly, the fact that Dr. Viets and others have seen patients from whom presumably a thymoma was removed and who nevertheless have gone downhill in spite of all treatment and in whom at autopsy there has been no evidence of thymus remaining must definitely indicate that aberrant function of the thymus may be one factor in the production of myasthenia gravis. It is not by any means the only factor.

Dr. Victor Goodhill, Los Angeles: I should like to offer information which might be of help in the diagnosis. At the University of Southern California School of Medicine, in the Department of Anatomy, a method of motion picture roentgenography has been devised by Drs. Irving Rehman and Paul Patek. From the Department of Otolaryngology, I have been able to send them a number of patients with various difficulties in swallowing, including several patients with bulbar palsies, several patients with cancers of the hypopharynx and larynx and several tracheotomized patients. It is possible to take these motion pictures under the roentgen ray with barium swallows and to follow beautifully, with slow motion reproduction, the exact operation of the swallowing mechanism. I have seen rather startling demonstrations of palsies of the muscles of deglutition under the controlled guidance of a slow-motion picture roentgenographic reproduction.

Dr. Henry R. Viets, Boston: There are two particular points that I should like to add. One is that the diagnosis of myasthenia gravis is easily made now by injection of the proper amount of neostigmine methylsulfate. This is put up in a special diagnostic ampule which contains the correct amount to use for an adult. If one uses too little, as in the ordinary treatment ampule, one will not get sufficient response, so that some cases will be incorrectly diagnosed on that account.

The second point I should like to make is that the drug neostigmine is an extremely powerful stimulant, particularly in a patient who does not have myasthenia gravis. A normal person taking neostigmine will experience, in some cases, a parasympathetic stimulation of such a degree that he may even collapse. It is on account of this parasympathetic stimulation which occurs in normal persons that atropine is added, and it is advisable to have additional injections of atropine available when this test is made, particularly if the person does not happen to have myasthenia gravis.

DIAGNOSIS OF ANEMIAS IN INFANCY AND CHILDHOOD

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The diagnostic features of the anemias in infancy and childhood are influenced by numerous physiologic and anatomic changes which take place within and outside of the hematopoietic system. Alterations of the blood need to be interpreted, therefore, against the shifting background of normal hematologic changes which take place from birth through childhood. During this period the condition of the peripheral blood may reflect the results of the isoimmunization of the mother by fetal blood factors, abnormalities in maternal hematopoiesis, prematurity, the effect of rapid body growth, limitation of reserve bone marrow, reactivation of fetal blood sites and the greater inherent capacity of the hematopoietic system of younger subjects to react excessively to stimuli which would have little effect on an adult.

In this age period the anemias develop insidiously, and diagnosis before specific criteria are established may be difficult. Diagnosis is facilitated by the appraisal of data derived from various sources: history and physical examination, reference to age periods of most frequent incidence, comparison with the normal range of hematic values for each age period, study of the bone marrow by sternal aspiration, the roentgenogram, the hereditary aspects of the disease, careful scrutiny of the blood smear and the therapeutic response to liver, iron and folic acid.

In this presentation the criteria by which a specific disease is diagnosed will be discussed while elaborating more general considerations. Certain especially adapted technical procedures which have been found useful in establishing more precise quantitative data will be described.

HISTORY AND PHYSICAL EXAMINATION

Questions along the broad lines of causation will frequently reveal facts which lead to ready diagnosis. Information should be obtained concerning the onset of pallor, of purpura; the loss of blood from the bowel; infection, including exposure to animal parasites; the use of drugs known to affect hematopoiesis; renal disease; the rapidity of growth; overfeeding of milk with the refusal of solid foods, and the existence of anemia in the mother during pregnancy.

Information in regard to race and nationality is important in the diagnosis of sickle cell anemia and Mediterranean anemia. While sickling of the red blood cells occurs almost exclusively in the Negro race, it has been observed occasionally in the white families which are principally of Mediterranean origin. In Mediterranean anemia the patients are mainly of Greek, of Italian (principally Sicilian and from the Italian peninsula below Naples) or, less frequently, of Syrian origin. Lately a few authentic cases have been recognized among Chinese, Asiatic Indian, Turkish and Egyptian children, and recently Faber and Roth[1] described a case in a Negro girl. There is growing evidence that the trait and mild forms of Mediterranean anemia (familial erythroblastic anemia) occur with greater frequency in this country than published reports have indicated. Since the milder forms may occur in one or both parents born in this country, it is necessary to determine whether any of the grandparents are of Mediterranean origin.

While pallor is frequently misleading as an indication of the degree of anemia, its presence is a valuable diagnostic aid. The history of its onset as obtained from parents is occasionally vague and unsatisfactory, particularly in the chronic forms of anemia. In this connection Wintrobe[2] has pointed out that the physiologic adjustments in chronic anemia may be so efficient that physical activity can be carried out for long periods of time with decidedly lowered hemoglobin levels.

In advanced cases of Mediterranean anemia the skin and facies present a striking diagnostic appearance. The pale, muddy yellow pigmentation of the skin and mongoloid facies produced by changes in the skull bones are characteristic of the established form of Mediterranean anemia. In those instances of aplastic anemia in which the course is prolonged, the increasing pallor is in some instances replaced by a dark pigmentation of the skin which during terminal phases assumes an aspect of bronzing. The value of examination of the skin in diagnosis of anemia is exemplified by a careful history of the exact timing of the development of jaundice. The history of the earlier onset and increasing depth of jaundice in erythroblastosis fetalis differentiates it from the slowly progressing and milder degree of jaundice associated with icterus neonatorum. Visible jaundice at birth and its deepening for a few days is of diagnostic value in those cases of erythroblastosis fetalis in which there is no anemia and in which the number of nucleated blood cells is only slightly increased.

Splenomegaly is commonly found in infants and young children suffering from anemia due to a variety of causes. Enlargement is most noticeable in the diseases associated in some manner with hematic destruction, such as erythroblastosis fetalis, acute hemolytic anemia, familial hemolytic jaundice, sickle cell anemia and Mediterranean anemia. In this group it is not uncommon for an increase in the size of the spleen to occur during periods of pronounced anemia and for shrinking to follow during quiescence, particularly as a result of transfusions. In sickle cell anemia the spleen is most likely to be enlarged in infants and young children and to become progressively smaller and more fibrotic as the patient gets older. In patients with an active form of congenital hemolytic jaundice and in Mediterranean anemia the spleen is enlarged, at times to an excessive size. In patients with the mild

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Read in a symposium on "Anemia in Infancy and Childhood" before the Section on Pediatrics at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

[1] Faber, H. K., and Roth, B. M.: Mediterranean Anemia (Cooley) in a Negro Girl, J. Pediat. **28**: 610 (May) 1946.

[2] Wintrobe, M. M.: The Cardiovascular System in Anemia with a Note on the Particular Abnormalities of Sickle Cell Anemia, Blood **1**: 121 (March) 1946.

form of both conditions the spleen is either not felt at all or is barely palpable. In young children with anemia of comparable severity the spleen is more likely to be enlarged in Mediterranean anemia than in sickle cell anemia or in congenital hemolytic jaundice. The spleen may be slightly enlarged in anemia due to iron deficiency and in megaloblastic anemia of infancy. It is not enlarged in aplastic or hypoplastic anemia or in the anemia of prematurity.

Except for the anemia associated with infection or with leukemia, lymphadenopathy is not a conspicuous clinical feature of the anemias. Enlarged cervical nodes frequently associated with palpable spleen occur in the anemia due to infection of the upper part of the respiratory passages. The superficial lymph nodes may be slightly enlarged in Mediterranean anemia but not in the other intrinsic anemias. A generalized enlargement of the lymph nodes in the presence of a refractory anemia should arouse suspicion of leukemia. In the early stages of leukemia with leukopenia when no blast cells appear in the peripheral blood the spleen and lymph nodes may not be appreciably enlarged. In these instances the cause of the anemia can be ascertained by the discovery of the blast cells in the bone marrow.

AGE INCIDENCE OF THE ANEMIAS IN RELATION TO DIAGNOSIS

When infection which is responsible for the major number of anemias in younger persons is excluded as an etiologic factor, the remaining blood dyscrasias can be grouped for orientation according to the age periods of their most frequent incidence: newborn, infancy and childhood. The diagnostic features of erythroblastosis fetalis and of hemorrhagic disease of the newborn are apparent at birth or shortly thereafter. The anemia of prematurity, iron deficiency anemia and hypoplastic or congenital aregenerative anemia become noticeable during the earlier months of infancy. Megaloblastic or macrocytic anemia of infancy and hemophilia occur either during the first few months of life or in the older infant. The severe forms of hereditary hemolytic anemias, which consist of Mediterranean anemia, congenital hemolytic jaundice and sickle cell anemia, present themselves initially for diagnosis early in infancy, whereas the manifestations of the moderate forms develop more slowly and are noticed in later infancy or early childhood. Aplastic anemia and congestive splenomegaly (Banti's) disease and other disorders associated with splenomegaly and anemia, such as Gaucher's disease and leukemia, are encountered in childhood. It must be emphasized that the onset of the blood disorders first recognized in older infants and children precedes by a variable period the time when the distinguishing features of the condition become unmistakable.

NORMAL RANGE OF HEMATIC VALUES IN INFANCY AND CHILDHOOD

Hemoglobin Content and Red Blood Cells.—A primary consideration in diagnosis of the anemia is the designation of normal hematic values during the period of growth. A knowledge of the values for hemoglobin and red blood cells at birth and in the early newborn period are essential in the diagnosis of erythroblastosis fetalis, because there may be considerable variation in the clinical and hematologic manifestations of this disease. There is evidence, however, that normal values vary greatly in different areas and that these fluctuations depend in large measure on the race, geographic location and to a great extent on the technic of estimation.

In general the average hemoglobin level on the first day of life may be regarded as 20 Gm. per hundred cubic centimeters of blood, with values ranging from 18 to 22 Gm., and the red count as 5,500,000 per cubic millimeter, with a range from 5 to 6 million. During the first 2 years of life the hemoglobin content normally ranges from approximately 10 to 12.5 Gm. per hundred cubic centimeters of blood, with an average value of 11 Gm. Between 3 and 5 years of age it ranges from 12.5 to 13 Gm., and between 5 and 10 years, from 13 to 13.5 Gm.; during puberty it rises gradually to the adult value of 14.5 Gm. per hundred cubic centimeters. A count of 4 million red cells per cubic millimeter of blood may be regarded as the lower limit of normal for the older infant and child. In normal newborn infants the number of nucleated red cells in the first few days of life ranges from 3 to 10 per 100 white blood cells.

Volume of Packed Red Cells.—In all anemias the measurement of the volume of packed red blood cells by the hematocrit constitutes an important and essential guide for diagnosis and therapy. This determination reflects the total mass of cells in a unit volume of blood and has proved of fundamental value in the study of all anemias, in which considerable alterations occur in the size, shape and thickness of the red blood cells. It has the advantage of being reliable and least subject to error in quantitative interpretation. In iron deficiency anemia, for instance, the extremely low hematocrit measurement reflects the state of anemia more accurately than does the more moderate reduction in the number of red blood cells. Also in the asymptomatic person with the trait of Mediterranean anemia the volume of packed red cells frequently remains at the same level in spite of wide fluctuations in the number of red cells.

For measuring the volume of packed red cells with the use of blood from the finger, the method described in previous publications[3] has continued to prove reliable; it is particularly useful in infants and children, in whom repeated venipuncture is undesirable. The values secured with this method coincide with those obtained with venous blood.

Because of the variations noted in available studies, it is difficult to state the optimum packed cell volume for different age groups. As a working basis, a hematocrit reading of 36 per cent constitutes the lower limit of normal for infants and children and one of 40 per cent, the minimum for older groups.

The Fragility Test.—The resistance of the red corpuscles to varying dilutions of hypotonic solution of sodium chloride constitutes an important laboratory procedure in the diagnosis of the anemias and is especially useful in the differentiation of the hemolytic group. The response of blood cells in the fragility test does not necessarily reflect their reaction within the circulating blood, where conditions of isotonicity prevail. The resistance of the red cells to hemolysis in the fragility test depends undoubtedly on a number of intrinsic factors, which involve the structure and properties of the cell envelope. It constitutes, however, a useful gross index of the relative thickness of the major number of red cells in the sample of blood to be tested. If the red cell envelope is small in relation to its volume, as in the thick red cells or spherocytes of familial hemolytic jaundice, the resistance is decreased. Increased resistance to hemolysis is noted when the bulk of red blood cells possess relatively large surfaces in comparison with their substance, as occurs in the thin red cells of Mediterranean anemia and in iron deficiency anemia. Sickle cells are also more resistant to hypotonic saline solutions than are normal cells.

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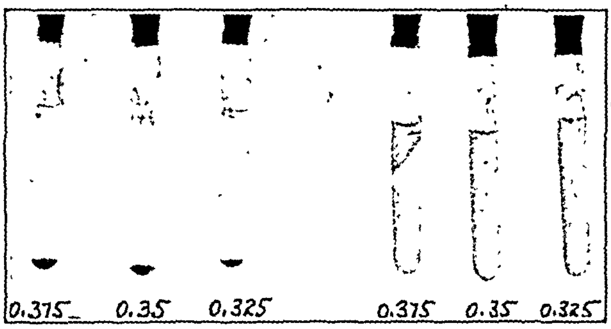
[3] (a) Smith, C. H.: A Method for Determining the Sedimentation Rate and Red Cell Volume in Infants and Children with Use of Capillary Blood, Am. J. M. Sc. **192:** 73 (July) 1936. (b) Sedimentation Rate in Nutritional Anemia of Infants and Children, Am. J. Dis. Child. **56:** 510 (Sept.) 1938.

Increased fragility of the red cells in hypotonic solutions of sodium chloride as compared with the fragility of normal blood occurs in congenital hemolytic jaundice and occasionally in acute hemolytic anemia associated with infection and ingestion of drugs. Decreased fragility with complete hemolysis in solutions below 0.3 per cent sodium chloride characterizes the blood of sickle cell anemia, mild and severe forms of Mediterranean anemia and iron deficiency anemia.



Screening test for erythrocyte fragility employing blood from the finger. The three tubes on the left contain blood from a person with the trait of Mediterranean anemia and show decreased fragility. The corresponding tubes on the right contain blood from a control and show normal hemolysis.

In studying large groups of patients suspected of having one of the forms of Mediterranean anemia several technical difficulties were encountered, which interfered with the frequent performance of fragility tests, especially in several members of a family. The difficulties involved the preparation of a large number of tubes containing serial dilutions of hypotonic solution of sodium chloride, the use of venous blood in small children and the need for a control in each period.

A screening test was therefore devised utilizing blood from the finger and three dilutions of hypotonic solution of sodium chloride, which experience had shown to offer information of a decisive diagnostic character. These were the tubes containing 0.375 per cent, 0.35 per cent and 0.325 per cent of sodium chloride. The method as here outlined is not meant to replace the routine fragility test but was devised solely as a gross method in screening out large numbers of patients suspected of having Mediterranean anemia. With the use of blood from the finger controls are readily available, and in normal persons the degree of hemolysis in the three tubes is as follows: with 0.375 per cent solution of sodium chloride, 3 plus; with 0.35 per cent, 3 or 4 plus, and with 0.325 per cent, 4 plus. Two or three drops of blood from the finger depending on the severity of the anemia, are obtained by deep puncture and added to each of the three tubes, each of which contain 2 cc. of solution of the prescribed concentrations of sodium chloride. After thorough mixing of blood and solution, the tubes are allowed to stand in a refrigerator until sedimentation has occurred. The degree of hemolysis and the residue of unhemolyzed red cells are compared with the same factors in the blood of a normal control treated in the same manner. If any clotting occurs the tube is centrifuged at low speed for a few minutes and the degree of hemolysis in the supernatant fluid is compared with that found in the corresponding tube of the control.

In seventy-five comparative tests with finger and with venous blood the extent of hemolysis in each of the tubes closely approximated that in the corresponding tube. When any discrepancy occurred venous blood was found to be slightly more fragile than finger blood. The usefulness of this procedure has also been demonstrated in a small group of cases which included congenital hemolytic jaundice, sickle cell anemia and iron deficiency anemia. The results with this method will be reported more fully later.

The Reticulocyte Count.—The reticulocyte count reflects the state of activity of the bone marrow; hence this determination provides a useful guide in the diagnosis of both deficiency and hemolytic anemias and in gaging the response to treatment. Normally from 0.5 to 1.5 per cent of the red blood cells are reticulated, and levels below 0.5 per cent represent an inactive bone marrow. A persistent depression in the percentage of the reticulocytes in spite of treatment occurs in aplastic and in hypoplastic anemia. In anemia due to a deficiency a reticulocyte response from previously low levels follows appropriate treatment. In the hemolytic anemias the values for reticulocytes are consistently elevated, and the high levels which are sustained prior to and without treatment represent intensified activity of the bone marrow. A simplified procedure previously described [8b] has been employed, which has been adapted from standard methods and requires no preliminary preparation of slides or other devices.

Icterus Index.—Blood destruction may be gaged by the level of the biliary pigments in the plasma and by the quantitative estimation of the urobilin in the stools. Intensity of the pigmentation of serum is readily measured by the icterus index, which usually ranges from 4 to 6. In hemolytic anemias the values range between 15 and 25. A greatly elevated icteric index points to hepatic damage and biliary obstruction rather than to jaundice due to hematic destruction alone.

EXAMINATION OF THE BONE MARROW BY STERNAL PUNCTURE

Investigation of the bone marrow by sternal puncture constitutes an invaluable laboratory aid in association with a careful examination of the peripheral blood. Information as to the normal range for the total nucleated cell count, the differential percentages for each type of cell, the variability in different age periods and the extent of individual fluctuations in bone marrow obtained by sternal aspiration is still limited. Despite these restrictions certain qualitative and gross quantitative alterations can be ascertained and a rough estimate made of hypoplasia or hyperplasia in the bone marrow and of the predominance of one or more types of cells.

Normal Bone Marrow.—The figures in table 2 represent the approximate range and average values of the cellular elements which one may expect to find in samples of the bone marrow obtained from normal infants and children. The higher lymphocytic percentages have been noted in normal infants beyond the neonatal period.

Bone Marrow in the Anemias.—The individual cellular constituents in the bone marrow are in such close proximity to each other that it is difficult to affect one element independently of the other. This total stimulation is best observed in the hemolytic anemias and most regularly in acute hemolytic anemia. In the latter, regeneration of the red blood cells is associated with an increase in the number of granulocytes and platelets. The reverse occurs in aplastic anemia, in which values for the three types of blood cells are depressed simultaneously. However, other factors must operate in addition to anatomic proximity, since involvement of a single type of cell may occur. This is illustrated in hypoplastic anemia, in which the production of red blood cells is inhibited without equal depression of the other cellular elements. Similarly, selected hyperplasia occurs in iron deficiency anemia and in chronic loss of blood, in which the normoblasts and their immediate precursors alone are primarily increased.

In the group of hemolytic anemias, which comprise congenital hemolytic jaundice, acute hemolytic anemia, sickle cell anemia and Mediterranean anemia, the bone marrow is hyperplastic and there is an increased proliferation of normoblasts and to a lesser extent of erythroblasts. Granulopoiesis may be active especially in acute hemolytic anemia. In iron deficiency anemia and in chronic hemorrhagic anemia the bone marrow is similarly hyperplastic; values for normoblasts are greatly elevated, but granulopoiesis is normal. In acute hemorrhage, however, the activity of the myeloid elements is also increased. The increase of the nucleated red cells in these disease processes in excess of 50 per cent of all the nucleated elements in the marrow constitutes an important diagnostic feature.

Aplastic anemia is associated with hematic observation of profound anemia, leukopenia, neutropenia and thrombocytopenia. The bone marrow shows a progressive decrease in cellularity, and there is a sharp reduction in the myeloid elements, megakaryocytes and nucleated red cells with a relative increase in normal lymphocytes. Occasionally acute lymphoblastic leukemia in the leukopenic stage may simulate aplastic anemia, and diagnosis is difficult without histologic examination of the bone marrow. Sternal aspiration in patients with leukemia will reveal a cellular bone marrow in which the normal nucleated elements are replaced by lymphoblasts and lymphocytes. With the progressive reduction in the number of platelets, hemorrhages occur in aplastic anemia which may simulate thrombocytopenic purpura. In the latter disease the bone marrow reveals hyperplasia of the megakaryocytes with values ranging from 200 to 300 per cubic millimeter.

Hypoplastic anemia differs from aplastic anemia in that the formation of red blood cells is depressed without equal involvement of the granulocytes or platelets. Aspiration of the bone marrow reveals pronounced reduction in the numbers of nucleated red cells as well as an increase in the numbers of primitive cells, or hematogones, and of eosinophilic leukocytes. The bone marrow in macrocytic or megaloblastic anemia of infancy[4] reveals a megaloblastic type of erythropoiesis and changes in the granulocytes resembling those observed in pernicious anemia.

THE ROENTGENOGRAM IN DIAGNOSIS OF HEMATIC DYSCRASIAS

The greater value of the roentgenogram in the diagnosis of hematic dyscrasias in earlier periods of life can be related to the developmental features of the bone marrow. Only with the appearance of nonfunctioning yellow marrow in the older child and its extension in the young adult is a potential reservoir created for the formation of blood when the demand for hematic regeneration is increased. In early infancy, however, the need for increased formation of blood arising from anemia due to infection or associated with specific hematic diseases may necessitate the reactivation of extramedullary fetal sites. When there is need beyond this for the formation of blood, the marrow expands by absorption or atrophy of bone trabeculae and of the cortex, and the visualization of these changes in the roentgenogram is utilized in diagnosis.

Leukemia may be difficult to distinguish from other hematic dyscrasias in the stage when anemia is associated with leukopenia and minimal enlargement of the spleen and lymph nodes. The roentgenogram fre-

TABLE 1.—*Significant Normal Values in Diagnosis of Anemias of Infany and Childhood*

Hemoglobin	1st day	20 Gm. (18 to 22 Gm.)
	2 weeks	17 Gm.
	1st 2 years	11 Gm. (10 to 12.5 Gm.)
	3 to 5 years	12.5 to 13 Gm.
	5 to 10 years	13 to 13.5 Gm.
	10 years to puberty	13.5 to 14.5 Gm.
Red blood cells	1st day	5,500,000 (5 to 6 million)
	2d week	5,000,000
	Older infant and child	4,000,000 per cu. mm. lower limit of normal
Nucleated red cells	Average at birth ranges from 3 to 10 per 100 white cells	
Reticulocytes	0.5 to 1.5%; (below 0.5% in aplastic and hypoplastic anemia; increased in hemolytic anemia; in deficiency anemia rise from low to high levels with treatment)	
Volume of packed red cells	Infants and children	30% is lower limit of normal
	Older age groups	40% minimum
Icterus index	Normal, 4 to 6 units; (hemolytic anemias, 15 to 25%)	
Fragility test	Normal range 0.425 to 0.325% sodium chloride; (increased fragility in congenital hemolytic jaundice and in some cases of acute hemolytic anemia; decreased fragility in sickle cell anemia, Mediterranean anemia and in iron deficiency anemia)	

TABLE 2.—*Relative Number of Nucleated Cells in Normal Bone Marrow (Sternal Aspiration)*

Total nucleated cell count approximately 100,000 to 150,000 per cu. mm.

	Range, %	Average, %
Myeloblasts	1 to 5	2
Myelocytes (including promyelocytes)	10 to 25	20
Nonsegmented polymorphonuclears (including metamyelocytes)	15 to 30	20
Segmented polymorphonuclears	5 to 30	25
Lymphocytes	5 to 25	13
Nucleated red cells (principally normoblasts)	15 to 30	20
Plasma cells	Occasional	
Monocytes	Occasional	
Reticulum cells	Occasional	
Hematogones	Occasional	
Megakaryocytes	10 to 35 per cu. mm.	

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[4] Zuelzer, W. W., and Ogden, F. N.: Megaloblastic Anemia in Infancy: A Common Syndrome Responding Specifically to Folic Acid Therapy, Am. J. Dis. Child. 71:211 (March) 1946.

quently throws light on the underlying pathological process in leukemia, disclosing generalized or local rarefaction, focal areas of absorption of the bone and of periosteal elevation. The extensive erythrogenesis is seen in Mediterranean anemia, familial hemolytic jaundice and sickle cell anemia. Pronounced skeletal changes appear with greatest regularity in Mediterranean anemia and similar changes but to a lesser extent are observed in the other members of this group. The roentgenogram in Mediterranean anemia reveals the evidence of extreme hyperplasia of the bone marrow by osteoporosis, thinning of the cortex, trabecular atrophy, coarse reticulation with regeneration of new bone, which is a later development in the disease, and thickening of the skull. Lateral views of the skull show an enlarged diploic space which is finely granular or mottled or striated. The vertical striations give the appearance of "hair standing on end," which seems to extend beyond the outer table. The earliest signs are observed in the small bones, particularly in the metacarpals and metatarsals, and reveal osteoporosis and expansion of the medullary cavities, producing a rectangular instead of the normal concave appearance. The inital osteoporotic process which occurs in infancy and early childhood is succeeded by osteosclerosis, in which new bone is formed and is represented in the roentgenogram by trabeculation and coarse reticulation. Osteosclerosis with cortical thickening in the large bones constitutes an outstanding feature of sickle cell anemia in adults, although its evolution from a previous osteoporotic phase has infrequently been noted.

TABLE 3—*Diagnostic Features of the Bone Marrow (Sternal Puncture) in Anemias of Infancy and Childhood*

Hemolytic group	
Erythroblastosis fetalis	Hyperplastic marrow with increase of nucleated red cells—chiefly normoblasts; granulopoiesis may also be active
Congenital hemolytic jaundice	
Sickle cell anemia	
Mediterranean anemia	
Acute hemolytic anemia	
Iron deficiency anemia..	Hyperplastic marrow with increase in normoblasts; granulopoiesis unchanged
Hemorrhagic anemia	Hyperplastic marrow with increase in nucleated red cells, chiefly normoblasts; granulopoiesis active in acute hemorrhage and unchanged in slow and chronic loss of blood
Megaloblastic anemia of infancy .	Pattern similar to pernicious anemia in relapse, megaloblastic type of erythropoiesis and changes in granulocytes resembling pernicious anemia
Aplastic anemia............	Usually decreased cellularity to acellular; sharp reduction in myeloid elements, megakaryocytes and normoblasts and increase in lymphocytes
Hypoplastic anemia...	Hypoplastic marrow with pronounced depression affecting normoblasts mainly; primitive cells (hematogones) and eosinophils increased
Lymphatic leukemia	Replacement of normal nucleated elements by lymphoblasts and lymphocytes
Thrombocytopenic purpura. ...	Moderate hyperplasia of marrow with increase in megakaryocytes

HEREDITARY FACTORS AS AN AID IN DIAGNOSIS

The accurate diagnosis of diseases of the blood in younger subjects frequently requires a consideration of hereditary factors. In certain of the hematic diseases a clue to causation and diagnosis is obtained by a search for similar hematologic abnormalities in the mother, by an investigation of the possible interaction of immunologic factors between mother and fetus which affect hematopoiesis and by a study of the blood of parents and siblings of the affected child for the presence of the trait.

The diagnosis of hypochromic microcytic anemia in an infant between the age of 3 and 6 months on the basis of inadequate storage of iron in fetal life is suggested by a history of iron deficiency in the mother during pregnancy. Congenital thrombocytopenic purpura in infants may be considered when the disease has been present in the mother. Occasionally, thrombocytopenia in the mother has not been associated with serious clinical manifestations and this condition has been discovered while investigating the source of purpura in the infant.

Probably the most important element in the diagnosis of erythroblastosis fetalis depends on a genetic study of the Rh blood factor in the infant and its parents. Typing of the blood for the Rh factor has become an essential diagnostic procedure. In the majority of cases the red cells of the father and of the infant possess the Rh factor and the mother lacks it. In the smaller group of Rh positive mothers, the Hr and the A and B agglutinogens may represent the responsible immunizing agents.

Sickle cell anemia, hemolytic jaundice and Mediterranean anemia are familial diseases in which the hereditary trait may be recognized by appropriate hematologic studies. The constitutional nature of these diseases is reflected in the comparatively high incidence in members of the same family.

The diagnosis of these diseases in a child with an obscure anemia of moderate severity can often be made earlier in its course and useless therapy avoided by the detection of the trait in the parents and siblings. In Mediterranean anemia, for instance, the most important element in the diagnosis of the milder form is the discovery of qualitatively similar alterations in the blood of other members of the same family. These persons are asymptomatic and are either mildly anemic or without anemia. Regardless of the hemoglobin level their blood shows hypochromic macrocytes, stippled erythrocytes, polycythemia, increased resistance of the red cells to hemolysis in hypotonic solutions of sodium chloride and, less frequently, target and oval cells. The presence of basophilic stippling may be so pronounced in the mild form of the disease as to confuse the condition with lead poisoning. On the basis of previous studies [5] and of an investigation now in progress the evidence is conclusive that in every family with a child severely affected with Mediterranean anemia and requiring periodic transfusions of blood both parents revealed evidences of the disease. As a corollary the important principle may be affirmed that the designation of a hematic dyscrasia as a moderate or severe form of Mediterranean anemia should not be made unless at least one of the parents shows the trait of the disease.

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[5] Dameshek, W.: Familial Mediterranean Target Oval Cell Syndromes, Am. J. M. Sc. **205:** 643 (May) 1943. Smith, C. H.: Familial Blood Studies in Cases of Mediterranean (Cooley's) Anemia, Am. J. Dis. Child. **65:** 681 (May) 1943. Valentine, W. N., and Neel, J. V.: Hematologic and Genetic Study of the Transmission of Thalassemia, Arch. Int. Med. **74:** 185 (Sept.) 1944.

Rundles and Falls[6] recently described an anemia affecting the male members of two families of non-Mediterranean origin which was transmitted by females without anemia. Many of the latter had large spleens, and examination of their blood revealed minor abnormalities of the red cells.

DIAGNOSTIC CHARACTERISTICS OF THE BLOOD SMEAR

The examination of the blood smear represents the most direct means for observing the effect on morphology of the factors involved in the pathogenesis of a particular form of anemia In enumerating the changes in the blood cells it should again be emphasized that except for sickle cells and spherocytes there are no specific cells which may be considered pathognomonic of a particular disease. Target cells, oval cells, hypochromic macrocytes and basophilic stippling appear in certain stages of many anemias and therefore cannot be regarded as a specific hematologic feature of a single disease. They are of diagnostic value only when they are considered in conjunction with pertinent information obtained from other sources When anemia results from direct bone marrow depression such as occurs in aplastic and hypoplastic anemia or the marrow cell displacement of leukemia, the red cells are both normochromic and normocytic, and anisocytosis, poikilocytosis and achromia are minimal

In erythroblastosis fetalis, the acute phases of congenital hemolytic anemia, sickle cell anemia, Mediterranean anemia, acute hemolytic anemia and acute posthemorrhagic anemia, the blood film reveals certain common features These reflect increased activity of the bone marrow and include reticulocytosis, nucleated red blood cells, leukocytosis, increased granulocytes, immature myeloid cells and in certain instances (acute loss of blood and acute hemolytic anemia) an elevation in the number of platelets.

The hematic observations that characterize each form of anemia are summarized in table 4 Occasionally the blood films in well defined conditions resemble each other so closely that corroborative evidence from auxiliary sources is required to establish a diagnosis This overlapping is exemplified in certain children with sickle cell anemia in whom the typical cells are demonstrated with difficulty in the fixed smear or with sealed preparations of fresh blood. In the anemic patient with this disease the smear reveals target and oval cells, numerous hypochromic macrocytes and occasional stippled cells When sickle cells are absent, differentiation of this disease from Mediterranean anemia at a comparable stage is difficult Reexamination with various technics to demonstrate sickling and study of the blood of other members of the family for the distinguishing features of either disease may be necessary to separately classify the two conditions

THERAPEUTIC RESPONSE AS AN AID IN DIAGNOSIS

The insidious onset of many of the anemias of early life renders their diagnosis difficult before specific criteria are established Until the important features have developed, the response to a therapeutic agent often serves to eliminate certain conditions and focus attention on others Since the low hemoglobin value is the outstanding feature of the anemias in early life, the observed response to a therapeutic trial with an iron salt constitutes an ideal preliminary procedure for purposes of differential diagnosis. For example, when iron in sufficient dosage is administered to an infant or young child with anemia of moderate severity, the absence of a reticulocyte response and a failure of the hemoglobin to return to normal values within three to four weeks suggest continued activity of an acute or chronic infection or of some other exogenous factor or that the diagnosis of anemia on a deficiency of this mineral alone is to be questioned By the employment of this principle, cases of Mediterranean anemia have been uncovered in early infancy when the clinical, [illegible] hematologic features were still [illegible], anemic syndromes resistant to therapy with liver and iron suggest the possibilities of aplastic or of hypoplastic anemia On the other hand a satisfactory response to folic acid or to liver extract in an infant with a macrocytic anemia contributes important confirmatory evidence for the diagnosis of megaloblastic anemia[4]

Table 4—*Diagnostic Features of the Blood Smear in Anemias of Infancy and Childhood*

Erythroblastosis fetalis	Hyperchromic macrocytes, nucleated red blood cells
Hemorrhagic anemia *.	Acute blood loss, normochromic and normocytic red blood cells, chronic blood loss; hypochromic microcytes
Iron deficiency anemia	Hypochromic microcytes, pronounced central pallor of red blood cells, poikilocytes
Anemia of prematurity.	Early normocytic and normochromic red blood cells; later hypochromic microcytes
Megaloblastic anemia of infancy	Extremely large macrocytes, microcytes, occasional nucleated red blood cells, abnormal neutrophils
Aplastic and hypoplastic anemia	Normochromic and normocytic red blood cells
Congenital hemolytic anemia ..	Spherocytes and large number of reticulocytes
Sickle cell anemia	Sickle cells, target and oval cells, hypochromic macrocytes
Mediterranean anemia †	
Severe type	Extremely large, thin hypochromic macrocytes; nucleated red blood cells, pronounced poikilocytosis and anisocytosis
Mild type or trait	Hypochromic macrocytes, basophilic stippling, polycythemia, target and oval cells

* This applies to phases of hemorrhagic disease of the newborn, hemophilia, thrombocytopenic purpura, to less common hemorrhagic disorders and to nonspecific conditions associated with loss of blood

† In both types the red blood cells show increased resistance to hemolysis in hypotonic solutions of sodium chloride

SUMMARY

While many of the anemias of infancy and childhood do not differ greatly from those of the adult, their diagnosis may be attended with difficulty because of peculiarities in this age period The anemias in early life develop insidiously, and diagnosis may be uncertain before specific criteria are established Alterations in the blood need to be appraised in the light of the residual effects of fetal and maternal influences on hematopoiesis and of normal changes incident to growth and development Many of these complexities may be resolved and diagnosis facilitated by coordinating the information obtained from the sources which were described in this paper. The detection of hematic disturbances requires a careful history and the use of simple instruments and technics; and the collection of data and their interpretation lie within the province of every medical practitioner.

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PATHOGENESIS OF ANEMIA IN INFANCY AND CHILDHOOD

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Anemia is a pathologic state characterized by a decrease in the amount of hemoglobin per unit volume of circulating blood and resulting in a reduction of the oxygen-carrying power of the blood. Many details regarding the genesis of anemia remain to be settled, but it is clear that the various causative factors capable of producing the anemic state must operate through a few basic mechanisms. An understanding of these mechanisms is essential for the interpretation of blood pictures and for the rational treatment of the anemias of all age groups. The peculiarities of the anemias of infancy and childhood are due not to fundamental differences in the pathogenic mechanisms but to the peculiarities of the infantile organism itself, especially growth and metabolism, nutrition and susceptibility to infection, which modify and favor the development of anemia. While stressing the significance of these special features, a discussion of the pathogenesis of the anemias of infancy must be based on principles applicable to anemia in general.

The blood, more specifically the circulating hemoglobin, may be compared to a reservoir in which a constant level is maintained by regulatory mechanisms which govern the intake and outflow. The intake is determined by the production and release of hemoglobin-containing cells by the marrow organ, which is the only normal source of supply in extrauterine life. The outflow represents destruction and removal of erythrocytes from the circulation with subsequent breakdown of hemoglobin in the reticuloendothelial system, especially the spleen. Under physiologic conditions the production and destruction of hemoglobin are balanced, and in adult life both the size and the level of the reservoir remain constant. In childhood, especially in infancy, however, the production of hemoglobin must not only replace physiologic losses but also furnish new material as the total blood volume increases with the rapid growth of the body, so that the absolute size of the reservoir is greatly expanded while its level remains nearly constant. In the anemic state the level falls because the regulatory mechanisms fail. In the last analysis anemia is always the result of either diminished production of hemoglobin by the marrow or excessive loss of hemoglobin from the circulation or a combination of both. For the purposes of this discussion the two fundamental mechanisms will be considered separately.

DIMINISHED PRODUCTION OF HEMOGLOBIN BY THE MARROW

The role of the marrow in the production of hemoglobin may be viewed under the aspects of cellular regeneration and the synthesis of hemoglobin. Erythrocytes are formed by mitotic division of nucleated precursor cells—erythroblasts—at different levels of cellular development. In the process of maturation the erythroblasts synthesize hemoglobin and cease mitotic activity. The majority of these elements lose their nuclei, pass into the reticulocyte stage and are then ready for delivery into the circulation. The regeneration of erythrocytes is a delicately integrated process, which normally operates far below the maximum capacity of the system. The known facts support the view that this process is regulated within certain limits by the supply of oxygen and that relative anoxia stimulates mitotic division of erythroblasts, while an abundant oxygen supply seems to have the opposite effect.

In fetal life oxygen tension is low and erythropoiesis is highly active. In early infancy a quantitative reduction in erythroblastic regeneration takes place, apparently in response to the improved oxygenation following the change from placental to pulmonary ventilation. This adjustment falls into a period of rapid growth with expansion of the blood volume, which tends to dilute the circulating hemoglobin. The combination of these two factors, decrease in the rate of erythropoiesis and increase in the volume of blood accounts for the relatively low hemoglobin level of the normal infant which is spoken of as the physiologic anemia of infancy. The more pronounced anemia of prematurity is due to an accentuation of these same factors. The growth rate and expansion of blood volume is relatively greater than in the full term infant. The oxygen supply to the tissues of the premature infant may be assumed to be greater than that available to a fetus of comparable conception age. Moreover, the hypothermia and inactivity of such infants suggest a low rate of consumption of oxygen. One would therefore expect an inactive erythropoiesis, and this is borne out by actual studies of the marrow.[1] Blood formation in the premature infant is even less active than that in the full term infant. The anemia of prematurity, like the physiologic anemia of early infancy, is not due to some deficiency but may be considered as the result of these adjustments which are physiologic for the premature infant, as far as anything can be called physiologic in these patients. This view is supported by the observation made repeatedly in the laboratory of the Children's Hospital of Michigan that hemolytic or hemorrhagic episodes which produce a definite demand on the marrow are followed by hyperplasia of the marrow and reticulocytosis of the peripheral blood even in premature infants. This observation indicates that the marrow can respond if the proper stimulus is provided. It should be clear that the administration of iron cannot influence the early phases of the anemia of prematurity although it later can prevent the iron deficiency anemia to which the premature infant is subject after the third month.

The view that the rate of regeneration of the red blood cells is related to the available supply of oxygen is supported by the observations in hypothyroidism, in which the consumption of oxygen in the tissues is abnormally low. The anemia of myxedema is associated with hypoplasia of the bone marrow (a reduction in the number of cell divisions), which has been interpreted as an adjustment to the low oxygen consumption of the hypothyroid state.[2] It is possible that the anemia often seen in scurvy is likewise related to decreased consumption of oxygen, because lack of ascorbic acid interferes with the oxidative process in the body and because hypoplasia of the marrow has been noted in scurvy.[3] However, loss of blood and iron deficiency

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Read in a symposium on "Anemia in Infancy and Childhood" before the Section on Pediatrics at the *Ninety-Fifth Annual Session* of the American Medical Association, San Francisco, July 5, 1946.

[1] Zuelzer, W. W.: Unpublished observations.
[2] Bomford, R.: Anemia in Myxedema, Quart. J. Med. 7: 495, 1938.
[3] Israels, M. C. G.: Erythropoiesis in Scurvy, Lancet 1: 170, 1943.

usually complicate infantile scurvy, and the evidence in regard to the anemia of scurvy is as yet conflicting.[4]

Reduction in the supply of oxygen to the marrow is followed by an increase in the rate of regeneration of the red blood cells. It is immaterial whether the anoxia is brought about by decreased atmospheric oxygen pressure, by increased consumption of oxygen in the rest of the body, by circulatory conditions, by impairment of pulmonary ventilation or by anemia. Anoxia is the common denominator of these states and may be considered as the physiologic stimulus for regeneration of the red blood cells. It is doubtful whether erythropoiesis can be stimulated in any other way except through the mechanism of marrow anoxia. At least it has not been shown that normal marrow under normal oxygen tension can be stimulated to increase the production of red blood cells.

Anemia, then, is in itself a stimulus for the marrow. This is illustrated by the changes which follow acute loss of blood. The anemia causes a decided increase in the number of cell divisions among the erythroblasts, i. e., the marrow becomes hyperplastic. As newly formed cells mature and reach the reticulocytic stage they enter the blood, the anemia is alleviated, the oxygenation of the tissues improves and the marrow response subsides. In the previously normal person this sequence of events occurs without any form of therapy. If anoxia of the marrow is prevented or relieved by blood transfusion the response is abolished or proportionately diminished.

The effect of excessive destruction of the blood on the activity of the marrow is the same as that of sudden loss of blood. However, if blood destruction is continuous and severe, as in chronic hemolytic anemias, even maximal activity of the marrow cells may not fully compensate for the loss of hemoglobin and the anemia may persist. If the degree of hematic destruction can be reduced, as may be the case after a splenectomy has been performed, the activity of the marrow decreases as the hemoglobin approaches normal levels.

Such compensatory adjustments require a normally functioning marrow organ. Often, however, impairment of erythropoiesis itself is the primary factor in the development of anemia, and in that case the anoxic stimulus cannot be effective until conditions necessary for normal functioning of the marrow are restored.

This is illustrated by the true marrow deficiency states, in which factors essential for the normal functioning of erythroid cells are lacking. Experimentally a number of such factors have been demonstrated, but thus far only two have proved of practical clinical significance. One is an antianemic principle often referred to as erythrocyte maturation factor, contained in liver and according to recent studies also in folic acid[5] and perhaps identical with the latter. If this factor is not available to the marrow the erythroblasts become abnormal in structure and function. In these pathologic cells, which are generally called megaloblasts, the delicate mechanism of mitotic division is affected.[6] Multiplication is restricted mainly to the most primitive precursor cells. This derangement in the regulation of mitotic activity leads to the apparent paradox of marrow hyperplasia with hypoplasia of the blood, or anemia; few of these primitive megaloblasts mature, and their long maturation period means delay in their delivery to the blood. Such cells as enter the circulation are large because they represent end stages in the development of large primitive cells; hence, anemias of this type are usually macrocytic. Pernicious anemia, the classic example of a deficiency in antianemic principle, seldom occurs in infants[7] and is extremely rare in children. Recent studies of marrow patterns, however, have shown that a temporary deficiency of the antianemic principle is fairly common in infancy. The term megaloblastic anemia has been proposed for this condition.[8] It can arise as the result of dietary deficiency as in so-called goat's milk anemia and also apparently through interference with absorption or utilization of antianemic principle on the basis of infection. Megaloblastic anemia is occasionally seen in children with celiac disease as one of the secondary deficiency states associated with faulty absorption by the gastrointestinal tract. If the missing antianemic factor, whether it be liver principle or folic acid, is supplied, cellular regeneration quickly returns into normal channels, the stimulus of the anemia can lead to an effective response by the marrow and mature cells are again produced in adequate numbers.

Iron deficiency states have a somewhat different effect on the marrow. Iron is an actual building stone of the hemoglobin molecule. The erythrocytes which are produced when adequate amounts of iron are not available to the marrow cells are small and hypochromic, because they contain less than their normal complement of hemoglobin.[9] The erythroid marrow may respond to the anemia and become hyperplastic, but the hemoglobin content of the cells and the hemoglobin level of the blood continues to fall. Soon the red blood cell count also falls, because the hemoglobin-deficient erythroblasts do not mature properly and as a result fewer and fewer cells reach the circulation. When iron is made available, the synthesis of hemoglobin can proceed and the cells again mature in normal fashion.

Obviously iron can be effective only where an iron deficiency of the marrow exists. This occurs principally after exhaustion of the storage iron in the tissues. The preponderance of iron deficiency anemia in infancy is related to the state of this reserve. The storage iron is scarcely affected by the loss of iron through excretion, which is negligible. The iron liberated in the breakdown of hemoglobin can be used over and over for the formation of blood. In the adult the blood volume and total hemoglobin mass is constant and the iron reserves of the tissues are seldom drawn on except after an actual loss of iron from the body, as in hemorrhage. In the infant the rapid growth of the blood volume requires a considerable increase in total hemoglobin if adequate levels are to be maintained. It has been aptly said that the infant bleeds into its own increasing blood volume.[10] Since the milk diet of early infancy is poor in iron it follows that the infant must draw on storage iron for blood formation and live, as it were, on its capital reserve of iron. The smaller the initial deposit and the greater the rate of withdrawal, i. e., the growth rate, the more likely it is that anemia will develop. The premature infant who fails to receive the deposits of iron normally transferred during the latter part of gestation and whose rate of growth is high must soon exhaust the initial reserve of iron. At that time the already exist- [illegible] [illegible]mia of prematurity proper is [illegible] by the hypochromic anemia of iron deficiency. The full term infant whose mother suffered from iron deficiency during pregnancy has a normal hemoglobin level at birth but inadequate stores of iron and is prone to the development of an iron deficiency anemia which is preventable.[11]

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The size of the reserve of iron may be materially reduced if early ligation of the cord deprives the newborn of the iron contained in the placental blood and normally converted to storage iron.[12] Such infants are more prone to the development of anemia than if this blood had been allowed to return to the circulation. Depletion of storage iron through chronic loss of blood is an infrequent occurrence in infancy but must be considered in regions where hookworm infection is prevalent. Because of the normal drain on the reserves of iron in infants, even acute loss of blood may be followed by a lasting anemia.

In the full term infant the iron stores available after birth are ordinarily sufficient to allow for the growth of the total hemoglobin mass until they can be replenished by iron from the diet. If food rich in iron is not then made available, anemia will develop on a nutritional basis alone. However, a deficiency anemia due to lack of iron is not necessarily the result of inadequate dietary intake; in fact, purely nutritional anemia is relatively infrequent even in infancy. In most instances infection is a precipitating factor.[13] It may interfere with ingestion or absorption of food iron by producing anorexia, vomiting or diarrhea, but its effect on the utilization of iron is far more direct and profound. Available evidence indicates [14] that in the presence of infection, iron is diverted from the marrow and immobilized in the tissues; hence it is not available for the synthesis of hemoglobin. This is true even for iron administered therapeutically. The infant is dependent on storage iron to a far greater extent than is the adult and thus is more liable to anemia when the marrow is cut off from its supply of iron. It is likely, however, that some infections at least have a still more immediate effect on erythropoiesis and can depress cellular regeneration directly.

Iron therapy is usually ineffective in the presence of continued infection but will nearly always produce remission once the infection is overcome. Whether a deficiency of copper is of clinical significance in human anemias is a question of little importance, because traces of copper are present in ordinary commercial iron preparations.

In Mediterranean anemia the red cells are deficient in hemoglobin; yet this hypochromic anemia is permanently resistant to iron therapy, apparently because iron cannot be utilized. The nature of this disease is not yet fully understood, but the known facts support the theory that the marrow cells are in some way unable to synthesize hemoglobin properly or at least in adequate amounts. The disease is hereditary and at present can best be explained as an inborn error of metabolism which affects the marrow cells.

In contrast to the megaloblastic and the hypochromic anemias, in which qualitative as well as quantitative changes in marrow function are evident, certain anemias are characterized by a simple quantitative reduction in the regeneration of erythroid cells which persists in spite of the increased demand caused by the anemia. These conditions may be designated as hypoplastic and aplastic states. The failure to make new erythrocytes produces a proportionate fall in hemoglobin and in the red blood cell count, and reticulocytosis and other signs of hematic regeneration are lacking. Similar blood pictures, however, are observed in the presence of actual hyperplasia of marrow with the arrest of maturation, when primitive cells are formed but are not released into the circulation.[15] The so-called hypoplastic and aplastic blood pictures can therefore reflect diametrically opposite conditions of the marrow and can be interpreted properly only through a study of the marrow. Therefore the concept of hypoplastic-aplastic states must be based on the process in the marrow rather than on observations in the blood.

Hypoplasia of the bone marrow may involve erythroid elements selectively or may affect all marrow cells. Erythroid cellular hypoplasia is found in anemias associated with a variety of conditions, such as infection, chronic renal disease and malignancy, and will persist until the underlying disease is eradicated.[16] Selective hypoplasia of erythroid marrow cells of completely obscure cause is seen in a rare chronic anemia of children, which appears to be congenital and which bears the name chronic hypoplastic anemia.[17] The production of leukocytes and platelets remains adequate, and the patients can live comfortably as long as transfusions at appropriate intervals provide the necessary red blood cells.

Occupation of the marrow space by such processes as fibrosis, sclerosis, osteopetrosis, metastases and infiltration with Gaucher's cells leads to a different picture. Such marrow as remains is highly active; the blood contains immature cells probably derived from extramedullary sites of blood formation, and the observations in this so-called myelophthisic anemia may simulate those of leukemia. Perhaps the anemia of leukemia is itself such a myelophthisic process;[16] in any event the leukemic cells proliferate at the expense of erythroid elements, and erythropoiesis is often reduced to the vanishing point.

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The term aplastic anemia is customarily reserved for states in which general depression of marrow activity causes leukopenia and thrombopenia as well as anemia. Such cases are extremely infrequent in childhood, and most of the anemias so classified eventually turn out to be leukemias of the so-called aleukemic type.

EXCESSIVE LOSS OF HEMOGLOBIN FROM THE CIRCULATION

In regard to the mechanisms of blood destruction, both physiologic and pathologic, many details remain to be clarified. The anemias characterized chiefly by increased destruction of blood are referred to by the generic term hemolytic anemias. Actually hemolysis in the sense of lysis of the erythrocytic membrane is only one of several mechanisms that may cause destruction of erythrocytes.[18] In the physiologic turnover hemolysis seems to play no part. The consensus is that during their stay in the circulation the erythrocytes are gradually fragmented by the constant of slight mechanical trauma to which they are exposed.[19] The minute remnants are eventually removed by phagocytosis in the reticuloendothelial system, mainly in the spleen. Phagocytosis of whole cells also occurs but is of minor importance, at least under normal conditions.[19]

The rate of destruction of the red blood cells in the absence of disease seems rather constant. I know of no compensatory mechanism whereby it could be decreased. An increase which might be called physiologic occurs in the first few days of life and accounts at least in part for the rapid reduction of the high hemoglobin levels of the newborn.[20] The details of this destructive process remain obscure.

The breakdown of hemoglobin results in the formation of bilirubin and its oxidation product, urobilinogen. With increased blood destruction the plasma bilirubin level tends to rise; but unless the hemolytic process is severe or hepatic function is impaired, excretion of the pigment by the liver prevents the rise to icteric levels, and clinical icterus is thus only a crude measure. Under certain assumptions the total excretion of urobilinogen in stools and urine is a much more delicate measure of the rate of destruction of blood than is the plasma bilirubin level. The total urobilinogen value depends, of course, on the total hemoglobin mass as well as on the turnover and is therefore much smaller in infants than in adults.

Free hemoglobin appears in plasma and urine only if there is hemolysis in the strict sense of the word and then only in the most fulminating conditions. This suggests that in most states associated with increased hematic destruction cellular mechanisms are involved.

Theoretically increased destruction of blood may be due to: (1) increased fragmentation of cells in the circulation; (2) structural anomalies of the red cells, which make them subject to destruction by the reticuloendothelial system; (3) sensitization of red cells, which makes them susceptible to phagocytosis while they are still intact; (4) increased activity of the reticuloendothelial system, causing its cells to engulf normal erythrocytes; (5) direct lysis in the circulation by hemolysins, bacterial toxins and poisons, and (6) parasitic invasion of red corpuscles, as in malaria.

It is uncertain whether all these mechanisms occur and to what extent the various factors may combine in a given type of hemolytic anemia. In most hemolytic states the reticuloendothelial system, and particularly the spleen, seems to be concerned in one way or another, whether as a passive acceptor of already doomed erythrocytes or as the initiator of the destructive process.

Mere evidence of increased blood destruction does not necessarily indicate an essentially hemolytic anemia but may reflect formation of abnormally vulnerable erythrocytes by a poorly functioning marrow. Signs of increased destruction of blood are evident in pernicious anemia, yet this disease is no longer considered as a hemolytic anemia but as a marrow deficiency state. Fragmentation of abnormal red corpuscles in the circulation is thought to account for the increased blood destruction in Mediterranean anemia,[21] and this disease is usually classified with the hemolytic anemias. But there is reason to consider a metabolic disturbance in marrow function as its essential feature and the fragmentation of the erythrocytes as incidental.

Exaggerated blood destruction is undoubtedly the significant mechanism in congenital hemolytic icterus and sickle cell anemia. The two diseases have many features in common. Both are constitutional anomalies characterized by hereditary transmission, exaggerated destruction of blood in the reticuloendothelial system and an anomalous structure of the mature erythrocytes. In congenital hemolytic icterus the erythrocytes are round instead of biconcave and in some way more susceptible to destruction by the reticuloendothelial system, notably the spleen. This abnormality is congenital and hardly due to substances elaborated within the spleen, since it persists after splenectomy. The fault lies with the cells themselves rather than with an abnormally active organ of destruction, as shown by the observations that cells from normal donors transfused to patients with congenital hemolytic icterus survive whereas the patient's cells disappear rapidly from the circulation of healthy persons.[22] However, since the abnormal cells are destroyed mainly by the spleen, removal of the spleen greatly decreases the rate of blood destruction. In sickle cell anemia the property of the red blood cells to sickle does not in itself account for the destruction of blood, because persons without anemia may have the sickle cell trait. It is uncertain whether the difference is due to a more pronounced abnormality in erythrocytic structure, as suggested by the more decided and more rapid sickling tendency of the cells in the anemic patients, or to greater activity of the destructive mechanisms. Because of the equivocal results of splenectomy in sickle cell anemia such mechanisms are thought to be widely distributed in the body. It has been observed, however, that immediate if only temporary cessation of all evidence of hemolysis occurs after splenectomy in sickle cell anemia quite comparable to the effect of this operation in congenital hemolytic icterus.[23]

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The so-called acquired hemolytic anemias, acute and chronic, are still obscure in their genesis. Hemolysins have been demonstrated in some cases[24] but not in others. Sensitization of the red corpuscles may play a part, as in cases in which the hemolytic anemia follows infection after a latent interval. Certain chemical agents may also produce hemolysis in this manner. The sulfonamide compounds, for example, have no hemolytic effect in the test tube in concentrations comparable to those attained in the blood by therapeutic doses and do not cause hemolysis in normal persons. The infrequent instances of hemolytic anemia after sulfonamide therapy may therefore be related to sensitization of the erythrocytes or of the reticuloendothelial system or of both. In the acquired hemolytic anemias the spleen may not be primarily overactive but may act merely as an acceptor of altered erythrocytes, which might otherwise survive. Reduction of the destructive potential of the reticuloendothelial system by splenectomy may therefore be beneficial and at times lifesaving, but its effects are less predictable in acquired than in congenital hemolytic anemia.

Isoimmune bodies affecting the erythrocytes in the circulation are responsible for the acute hemolysis which follows the transfusion of mismatched blood. The A or B agglutinins are usually the effective agents, but antibodies of the Rh type may cause similar reactions.[25] The role of maternal anti-Rh substances in producing the hemolytic anemia of erythroblastosis in the infant is now firmly established,[26] whereas proof that anti-A or anti-B agglutinins of the mother can produce anemia in the offspring is less convincing.

It is not generally appreciated that there is a fundamental difference in the mechanisms of transfusion reactions and erythroblastosis. In transfusion reaction the donor cells are affected by the recipient's antibodies, while in erythroblastosis the patient's own cells are exposed to the effects of immune bodies. It is likely that the effect of the anti-Rh substances is not limited to the red corpuscles but affects other tissues as well and that this accounts for many of the manifestations of erythroblastosis which cannot be explained by hemolysis alone.

Bacterial toxins, apart from a possible effect on the bone marrow, may have a hemolytic action in the test tube and apparently also in the body. This is especially true for infections due to hemolytic streptococcus and Clostridium welchii. Recent studies seem to indicate, however, that in most of the anemias associated with infections the role of hemolysis is negligible compared to the effect on the production of red blood cells.[14a] The anemia which follows extensive burns is apt to be hemolytic in character and is thought to be due to endogenous poisons, perhaps protein cleavage products which in some way sensitize or destroy red blood cells.

This discussion is not intended to present a complete review of the pathogenesis of all types of anemia. The purpose of this presentation was to furnish basic concepts on which the practical management of anemia can be oriented.

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CLASSIFICATION OF ANEMIA IN INFANTS AND CHILDREN

JAMES MARVIN BATY, M.D.
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A complete classification of anemia as it is encountered in all age groups must include morphologic, etiologic and clinical considerations. For the purposes of a symposium such as is being conducted today it seems important to simplify the subject as far as possible so that the discussion may be of value to the practicing physician. For this reason a classification is presented in which the causes of anemia are arranged in the order of their occurrence in a group of hospital patients. This grouping is slightly different from the order in which Dr. Zuelzer has discussed the "Pathogenesis of Anemia." Although it is incomplete, almost all cases of anemia may be placed in one of its categories.

Analysis of 1,500 consecutive admissions to the Boston Floating Hospital was made to determine the incidence of anemia in hospital practice. It was found that 514 patients, or 34 per cent, showed a definite anemia with an erythrocyte count of less than 4,000,000 per cubic millimeter or a hemoglobin percentage below 70. It should be pointed out that the Boston Floating Hospital is largely charitable and that most of the patients are unable to pay the costs of medical care. The hygienic and dietary background of such a group of children is not comparable to that of patients under the care of private physicians. Furthermore, only those patients with severe anemia and those with unusual conditions received the careful consideration of the hematologist.

TABLE 1.—*Incidence of Anemia in 1,500 Patients Admitted to Boston Floating Hospital*

Age, Years	Number of Patients	Per Cent Anemic
0 to ½	237	38
½ to 1	178	47
1 to 2	240	51
2 to 5	285	34
5 to 12	560	22
Total	1,500	34

The incidence of anemia in these 1,500 patients is shown in table 1. The second year of life is the period in which there is the greatest incidence of anemia, about 51 per cent. Approximately 45 per cent of the children under 2 years of age and 25 per cent of those between ages 2 and 12 were anemic. The etiologic factors responsible for the anemia in the 514 patients were determined as far as possible. The anemia was secondary to infection in about half of the cases (table 2). I am unable to present figures showing the bacterial agents or the locus of the infections involved in these cases. Other factors which have been discussed by Dr. Zuelzer seemed to be of greater importance in the occurrence and the severity of the anemia in the individual instances.

From the Department of Pediatrics of the Tufts College Medical School, the Boston Floating Hospital and the Children's Clinic of the Boston Dispensary.

Read in a symposium on "Anemia in Infancy and Childhood" before the Section on Pediatrics at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

In 92 per cent of the 514 patients with anemia the diminution in the hemoglobin and erythrocyte values were the result of infection, dietary deficiency, prematurity or some combination of these three factors. In the remaining 8 per cent the anemia was associated with congenital and familial conditions, acquired hemolytic states, primary hematic diseases and the other less common causes of anemia.

Table 2.—*Etiologic Factors in 514 Cases of Anemia*

	Number of Cases	Per Cent
Infection	252	49
Deficient diet	69	13
Prematurity	11	2
Combinations of foregoing	139	29
Miscellaneous	43	8

The classification in table 3 is arranged on an etiologic basis, more or less in the order of frequency of the etiologic factors. This is not offered as an inelastic classification but as a practical working basis for use in diagnosis and treatment.

The anemia associated with infection may be of three general types dependent on the mechanisms concerned in its production: (1) hypoplastic or aplastic anemia (diminished production of erythrocytes, the so-called toxic suppression of the bone marrow); (2) hemolytic anemia (increased destruction of circulating erythrocytes), and (3) secondary thrombopenic purpura (diminished production or increased destruction of blood platelets). In individual instances there may be all combinations of these mechanisms with resulting differences in the clinical manifestations.

Dietary anemia is most commonly the result of iron deficiency during either the prenatal or postnatal period due to an inadequate supply of iron-containing foods in the diet or a failure in absorption or utilization of iron.

Table 3.—*Anemia in Infants and Children*

1. Anemia secondary to infection
2. Dietary anemia (nutritional or alimentary anemia)
   Iron deficiency during:
      (a) Prenatal period
      (b) Postnatal period
3. Physiologic anemia of prematurity
4. Congenital and familial anemias:
   (a) Congenital hemolytic jaundice
   (b) Sickle cell anemia
   (c) Mediterranean anemia
5. Erythroblastosis (acquired hemolytic states)
6. Primary diseases of the blood:
   (a) Aplastic anemia
   (b) Purpura
   (c) Hemophilia
   (d) Leukemia
   (e) Lymphoblastoma (Hodgkins disease, lymphoma, etc.)
7. Anemia secondary to hemorrhage
8. A. Anemia associated with chemical poisons, such as benzene, lead, acetanilid and sulfonamide compounds
   B. Anemia associated with parasitic infection
   C. Anemia associated with neoplasms

In most instances there is hypochromia and microcytosis, and this type of anemia is frequently classified as hypochromic microcytic anemia. However, there may be a deficiency of the erythrocyte-maturing factor found in the liver, resulting in a macrocytic type of anemia which resembles pernicious anemia in many respects and which responds to folic acid.

The anemia of prematurity is physiologic in nature and is simply in a more pronounced degree the anemia which occurs in all infants during the neonatal period. The anemia is in proportion to the degree of prematurity, is severest at the third month of life and tends to disappear by the seventh month. The most important implication of this condition is that it sets the stage for the development of a more serious type of anemia if the infant suffers infection or dietary deficiency.

The congenital anemias include those conditions in which there is a congenital anomaly of the blood-forming organs which results in the production of abnormal erythrocytes. Although there is evidence of increased hemolysis in most instances, the fundamental disorder is the faulty formation of cells. These diseases may be racial and familial as well as congenital.

The fifth division of this classification, erythroblastosis, could properly be labeled acquired hemolytic states. In this case it would include other rarer conditions in addition to the hemolytic anemia of the neonatal period, which is on the basis of incompatibility of the blood groups of the mother and the infant.

The primary hematic diseases, hemorrhage and other miscellaneous causes of anemia are rare in infancy and early childhood but must be considered as possible etiologic factors in cases of obscure origin.

TREATMENT OF ANEMIAS IN INFANCY AND CHILDHOOD

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The treatment of anemia at any age period must inevitably be concerned with etiologic and pathogenetic factors. Rational therapy is possible only when such factors are properly evaluated. Dr. Zuelzer has discussed the basic mechanisms by which anemia is produced in infants and children. Dr. Smith has indicated methods by which these can be detected, and Dr. Baty has grouped the anemias according to their combined pathogenetic, etiologic and clinical characteristics.

The significant point established in the discussion is that the peculiarities of the anemias of infancy and childhood are not due to a fundamental difference in the pathogenic mechanisms but to anatomic, physiologic and clinical features of the infantile organism which condition the response to the various etiologic factors. Some of these features are more important at one age period than at another. Because of this fact therapeutic principles applicable to anemia in general must be related to the modifying influences of the age period and the periods of life in which they occur.

ANEMIA IN THE NEWBORN (BIRTH TO ONE MONTH OF AGE)

Anemia occurring in the neonatal period (birth to 1 month of age) may be due to several factors but is usually on the basis of loss of blood or increased hematic destruction. The symptom complex known as hemolytic anemia of the newborn, or erythroblastosis fetalis, is the most prevalent and is most effectively treated with Rh-negative blood, especially during the first two weeks of life. The amount and frequency of the transfusions should be determined by the patient's general condition and the degree of anemia.

Read in a symposium on "Anemia in Infancy and Childhood" before the Section on Pediatrics at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

Generally, a level of 3 million red blood cells and a hemoglobin of 8 Gm. are the minimum values to be achieved, and 10 cc. of blood per pound of body weight is the usual amount given at one time. In cases in which Rh-negative donors are not available blood from Rh-positive donors may be used if the plasma is separated and the red cells are washed and resuspended in isotonic solution of sodium chloride. The transfusion of Rh-positive blood without this preparation has been advised by some, but jaundice is often intensified and recovery is slower than with Rh-negative blood. Diamond has shown that many of the baby's red blood cells are bound to the so-called blocking antibody and that these are capable of agglutinating two or three times as much additional Rh-positive blood. This phenomenon may be demonstrated by a slide test devised by Diamond.

In all patients with severe anemia at any age period requiring frequent transfusions of blood Rh typing should be done, because an Rh-negative recipient may develop a sufficient anti-Rh agglutinin titer to cause a hemolytic reaction when Rh-positive blood is frequently administered. While anti-Rh agglutinins already exist in the blood of the newborn through isoimmunization from the mother, Rh-negative blood should be given whenever possible, reports to the contrary notwithstanding.

Hemorrhage in the newborn period is most frequently accidental and is usually associated with slipped cord ligature and trauma, and the blood lost should be replaced by transfused blood. Stewart Clifford of Boston has expressed the opinion that asphyxial bleeding is of greater importance than either traumatic or accidental factors and that appropriate measures to reduce asphyxial states would decrease the incidence of hemorrhage in the newborn. Prophylactic administration of vitamin K to the mother and infant has practically eliminated the incidence of hemorrhagic disease of the newborn (hypoprothrombinemia neonatorum). Hemophilia is seldom encountered in the newborn period except through surgical intervention or routine circumcision and is also effectively treated by the transfusion of blood. Congenital thrombocytopenic purpura is infrequently seen at this age, and when it is, blood transfusion rather than splenectomy is the treatment of choice, unless the disease cannot be controlled by this procedure. Bleeding from ectopic islands of gastric tissue scattered through the intestinal tract may account for obscure prolonged gastrointestinal bleeding at this period, just as it does in a Meckel's diverticulum.

Infection in the newborn period is often associated with a bacteremia and acute hemolytic anemia or with bleeding and purpura due to platelet depression. Transfusion in addition to chemotherapy is therefore indicated. In my experience and that of others anemia in the newborn that can be attributed to infection is less common in recent years.

A poorly defined entity, which is known as chronic hypoplastic anemia, may occur in the latter part of the neonatal period. It is an anemia of the normocytic type and involves the production of red blood cells without significant changes in white blood cells and platelets. No known cause has been found for this condition. Marrow stimulants have been advocated, but to date blood transfusion is the only satisfactory method of treatment. Splenectomy has been tried in some cases, but the procedure has not had sufficient success to warrant its use as a routine method of treatment.

ANEMIA IN INFANTS (ONE MONTH TO TWO YEARS)

Anemia in infancy is predominantly due to iron deficiency, and the red blood cells become deficient in hemoglobin (hypochromic) and smaller (microcytic) than normal. The obvious primary therapeutic consideration is the correction of the deficiency state by the administration of iron to the infant. On a purely theoretic basis other materials needed for hemoglobin synthesis may be lacking (protein, pigments such as chlorophyl, copper and other trace elements). Inferences drawn from animal experimentation would support such a possibility. Such evidence, however, does not justify the numerous shotgun proprietary preparations that are constantly offered to the profession without clinical facts to support their use. Preparations of this type increase the cost of medical care and minimize the careful evaluation of the cause of the anemia which is so important to well conceived and intelligent treatment.

The clinical evidence for the use of copper in hypochromic microcytic anemias of infants and children is conflicting. It is apparent from experimental work that copper is needed as a catalyst for hemoglobin synthesis and that it is concerned with the utilization of iron. It has not been demonstrated clinically, however, that routine use of copper with iron is necessary or desirable because traces of copper are present in most iron preparations and in the diet. This does not mean that copper is not needed, it merely suggests that routine supplemental use of copper is unnecessary unless the infant has been fed on an exclusive milk diet. In anemia which has proved refractory to treatment with iron in the absence of infection and other conditions which interfere with a favorable therapeutic response to iron, copper deficiency may conceivably be present, and the addition of small amounts of copper (1 cc. per kilogram of body weight of a 0.5 per cent solution of copper sulfate) may be necessary for adequate treatment. This dose should be smaller in older children, and even in young infants smaller doses should be given at first. The indication for such therapy has been minimal in my experience.

The exact status of the whole liver or its water-soluble fraction (Whipple) in the treatment of microcytic hypochromic anemias of children has not been accurately determined. It is possible and reasonable to assume that other nutritional factors necessary for the synthesis of the hemoglobin molecule may at times be deficient and that the deficiency can be corrected by feeding whole liver or its water-soluble fraction. However, this does not call for routine use of expensive liver and iron combinations that are without indication. The indiscriminate use of vitamins in the treatment of iron deficiency anemia beyond that needed for normal nutritional balance is also ill conceived and without sound clinical or experimental evidence. Fifteen to 20 Gm. of puréed liver daily may be given to infants up to 2 years of age, and 30 to 40 Gm. daily to children from the ages of 2 to 6 years.

The therapeutic management of microcytic hypochromic anemia often consists in something more than the correction of a possible deficiency of some substance needed to synthesize the hemoglobin. Insufficient store of iron combined with increased demand due to a rapid rate of growth, as seen particularly in prematurely born infants, is an important mechanism in the production of iron deficiency. Factors which lead to deficient absorption or excessive loss or which inhibit the utilization of iron are of equal if not greater importance in private practice.

It has been brought out in the discussion that infection and dietary deficiency play a more prominent role in the production of anemias of infancy and childhood than any other factor. This is especially true if such factors are present in the first two years of life. Close to 90 per cent of the anemias seen in pediatric practice are due to infection or dietary deficiency alone or in combination. If vomiting or diarrhea are present, failure of absorption and utilization of materials necessary for the formation of blood are added complications. Deficient iron stores due to maternal anemia during gestation, premature ligation of the umbilical cord at birth and premature and multiple births, together with the factor of increased need for iron due to a rapidly expanding blood volume, hasten the onset of hypochromic anemia and accentuate its severity.

Prophylaxis and treatment of the iron deficiency state should therefore be concerned with something more than administration of a suitable preparation of iron or, failing in this therapeutic venture, recourse to the proprietary shotgun preparations. Attempts should always be made to discover all possible causes for the iron deficiency state. In the adult this is usually chronic loss of blood; in the infant it is more likely dietary deficiency in the presence of increased demand or insufficient reserve, disordered alimentation and infection and frequently two or more of the preceding causes.

Iron therapy has been a controversial subject since its inception. Time does not permit a review of the comprehensive work of Whipple, Heath, Hahn, Wintrobe, Moore and others who have made significant contributions in this field. Moore and his group have conclusively demonstrated that iron is absorbed from the gastrointestinal tract in the soluble or ionized ferrous state. The ionization is facilitated by gastric acid if iron is not too firmly linked with other compounds. The degree to which ferric salts are absorbed depends on the capacity of the gastrointestinal tract to reduce them to the ferrous form. For extemporaneous prescription writing, the use of ferrous salts in acid vehicles would therefore seem to be the most effective type of medication. The following prescription is an example:

Ferrous sulfate	9.0 cc.
Spirit of peppermint	1.0 cc.
Solution of amaranth	1.0 cc.
Syrup of citric acid	60.0 cc.
Simple syrup to make	120.0 cc.

Drams 1 (4 cc.) equals approximately 2.5 grains (0.16 Gm.) anhydrous ferrous sulfate

The use of reducing agents like ascorbic acid or citrus fruits given with iron salts may enhance absorption.

The controversy concerning the relative value of various preparations of iron can be settled practically by stating that since larger doses of ferric salts are necessary than with the ferrous form and since large doses of iron are irritating to the gastrointestinal tract, the practical expedient is to use the preparation less apt to upset the infant or child, other factors being equal. Organic preparations of iron in the ferrous form have been preferred by some for this reason. Ferrous gluconate is an example and is an acceptable preparation. The parenteral use of iron is seldom necessary and is a painful procedure. The amount of iron present in the preparation is no index of its efficacy. It is the amount of iron absorbed and utilized, not the actual iron present, that controls hemoglobin regeneration.

The dosage of iron for therapeutic purposes is subject to wide variations, but the following dosage of ferrous sulfate is effective and is recommended: Birth to 2 years, 4 to 6 grains (0.26 to 0.39 Gm.) daily; 2 to 6 years, 6 to 8 grains (0.39 to 0.52 Gm.) daily, and 6 to 12 years, 10 to 12 grains (0.65 to 0.78 Gm.) daily. Ferric and ammonium citrate is given in daily doses of 2 cc. per kilogram body weight (1 cc. per pound) of a 10 per cent solution. The initial dose of iron should be small, and optimal doses should be approached gradually. The effectiveness of the preparation or adequacy of the dose of iron may be checked by the reticulocyte count just as one does with liver extract or folic acid in pernicious anemia. Within about three days after iron therapy is begun the reticulocytes begin to rise and reach a peak in seven to ten days. The level of hemoglobin and the peak of reticulocytosis is usually in an inverse ratio. The lower the initial hemoglobin value the higher the reticulocyte response which one will obtain with adequate iron medication, and this holds true with the daily increase of hemoglobin in response to treatment. The rate of increase of hemoglobin in response to iron therapy definitely slows as normal values are approached. If a patient with hypochromic microcytic anemia fails to respond after receiving adequate doses of iron and shows no reticulocytic response or disordered alimentation, this is suggestive of infection, chronic inflammation or neoplastic disease. In the absence of these factors, copper, whole liver or its water-soluble fraction may be tried. Such cases are few in number if the patient is on a diet well balanced in protein, mineral-rich foods and vitamins.

Thus far only iron deficiency or microcytic hypochromic anemias have been mentioned, because they are the anemias most prevalent in infants. Dr. Zuelzer has brought out that deficiency states leading to anemia may be produced either because iron and other materials used in the synthesis of hemoglobin are not available to otherwise normal cells or because the cells themselves are abnormal due to deficiency in an essential factor. Pernicious anemia in adults is an example of the latter. True pernicious anemia is rare in children below the age of 12 years. Pernicious-anemia-like macrocytic states of the blood have been observed in infants and children from time to time, in patients with celiac disease, in those with hepatic disease, infection, congenital malformation of the intestine and nutritional deficiency (especially infants fed goat's milk exclusive of other foods). Dr. Zuelzer has recently reported a series of 25 infants with macrocytic anemia, which he proposes tentatively to call megaloblastic anemia. Leukopenia with degenerative changes in the granulocytes and thrombopenia were also present. The syndrome may be produced by a variety of causative agents but always by the same basic mechanism, which is manifested by a characteristic megaloblastic bone marrow. The patients ranged from 2 to 16 months of age, and most of them had infections of the upper part of the respiratory tract or a nutritional disturbance and deficiency. Therapy with folic acid or liver extract was effective and dramatic with a characteristic reticulocytic response. The megaloblastic pattern in the bone marrow was transformed to normal within a few days. In contrast with pernicious anemia, the deficiency is not on a constitutional basis and once the deficiency is successfully treated relapses do not occur. The oral dose of synthetic folic acid is 5 to 20 mg. daily, the intramuscular 1 to 2 mg., depending on the severity of the case. Where parenteral liver extract is used intramuscularly ½ to 2 units daily of the crude extract is advised, depending on the severity of the case and the reticulocytic response.

Another factor apparently essential to erythropoiesis is vitamin C, or ascorbic acid. Anemia of this type shows its greatest incidence at this age period. Whereas uncomplicated iron deficiencies are microcytic and hypochromic and folic acid deficiencies are usually macrocytic and hyperchromic, anemia associated with uncomplicated scurvy is usually normocytic and normochromic. When complicated by hemorrhage and infection it may reveal iron deficiency, and when it is associated with deficiency in folic acid and other nutritional factors it may be macrocytic in type. The bone marrow pattern in uncomplicated scurvy is normoblastic in type and is not transformed by liver, folic acid or iron unless complicated by factors mentioned previously. Specific therapy with citrus fruit juices or ascorbic acid is necessary for cure and is accompanied by a prompt reticulocytosis. In cases in which iron deficiency or folic acid deficiency accompanies scurvy some response is obtained to treatment with iron or folic acid, but it does not specifically cure the primary cause of the anemia. Some observers feel that the role of ascorbic acid in the production of anemia as a primary mechanism is inconclusive.

ANEMIA IN PRE-SCHOOL CHILDREN (TWO TO SIX YEARS OF AGE)

Anemia occurring during the age period 2 to 6 years is usually due to nutritional deficiency and infection. Infection is a dominant factor and according to Dr. Louis Diamond's figures from Boston Children's Hospital produces anemia in the following roughly estimated groupings: 60 per cent are due to interference by infection with elements necessary for blood building; 30 per cent are due to decreased production of erythrocytes; 9 per cent are due to increased destruction of red cells, and 1 per cent are due to interference with platelet production and a bleeding state.

Anemia on the basis of infection may be of mixed type with microcytosis and macrocytosis at this age period. Such patients respond best to iron and liver therapy after the cause has been removed.

Congenital anemias may have their inception earlier but usually manifest themselves in greatest numbers at this age period. Mediterranean anemia, or Cooley's anemia, is resistant to iron therapy and other forms of treatment, although it is hypochromic in type. The exact nature of this disease is poorly understood, but the best explanation is that it is due to an inborn error of metabolism wherein the marrow cells are unable to utilize iron. Splenectomy has been advised, but it is of little permanent value. The same statement would hold true for the therapy of sickle cell anemia. Congenital hemolytic icterus responds as effectively to splenectomy in this age group as it does in adults.

Because of the predominance of infection at this age period, cases of acute hemolytic anemia or marrow depression due to drugs, particularly the sulfonamide group, are not uncommon, and acquired hemolytic states due to infection, drugs and transfusion reactions occur with increased frequency. An acute form of hemolytic anemia known as Lederer's anemia is difficult to classify on any confirmed etiologic basis but is most effectively treated with blood transfusions. Mention has already been made of the desirability of typing any patient requiring frequent blood transfusion for the Rh factor, since Rh-negative recipients may acquire a sufficient titer of positive Rh agglutinins with repeated injections of Rh-positive blood to have severe hemolytic reactions.

ANEMIA IN SCHOOL CHILDREN (SIX TO TWELVE YEARS OF AGE)

Anemia during the school age period is predominantly due to chronic infection, chronic inflammatory disease or loss of blood. Streptococcic infections and their complications head the list. Pyogenic infection, chronic sinusitis, pneumonia, nephritis, rheumatic fever, tuberculosis and symptomatic purpura are prominent as causes. Under normal conditions the iron reserves are fairly well stabilized at this age and iron deficiency is less common. Effective treatment of the cause of the anemia, together with the institution of a balanced diet, is effective unless the anemia is severe and requires blood transfusions as a palliative measure until the cause can be removed. The constant loss of blood due to the menstrual cycle in girls at puberty together with the growth spurt occurring at that period are basic to the iron deficiency state seen at this time. In the presence of a poorly balanced diet, particularly of iron-containing foods, the degree of anemia may become pronounced. Iron prophylaxis and therapy is important in the management of such cases.

SUMMARY AND CONCLUSIONS

Rational therapy demands a thorough understanding of the physiologic and pathologic factors of the age period in which anemia develops. While deficiency of nutritional substances necessary for the synthesis of hemoglobin and for normal erythropoiesis are important, factors which increase the demand, cause excessive loss or interfere with absorption and utilization of these substances are especially important causes for anemia during the active period of growth. It is for this reason that treatment of anemia in infants and children must be approached from a broad clinical perspective as well as from the point of view of the specific disciplines of hematology.

1819 West Polk Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SMITH, ZUELZER, BATY AND PONCHER

Dr. M. M. Wintrobe, Salt Lake City: What Dr. Baty had to say concerning the frequency of the various types of anemia emphasizes a significant point. While there has been a great deal of progress in hematology in the past two decades the advancement has been made in the understanding of the less common conditions and the more dramatic ones. Much less has been learned about the most commonly observed type of anemia, that which is associated with infection. In the study of the pathogenesis of such anemia it has been learned that in the presence of infection the plasma iron content is consistently and strikingly low. At the same time, the serum copper is elevated and the amount of free protoporphyrin in the erythrocytes is greater than normal. Pursuing these observations further, it was found that when iron was given by mouth, the plasma iron in patients with infection did not rise at all. However, this flat plasma iron curve is not due to a failure of absorption of iron, for if one gives such persons iron intravenously, one finds that the plasma iron content, unlike that in normal subjects, falls extremely rapidly. It has been possible to show that in the presence of infection there exists some disturbance which leads to the rapid withdrawal of iron from the plasma. If such persons are given radioactive iron the iron is incorporated in the red cells to a much smaller extent than occurs in normal persons. By tracing the distribution of the radioactive iron in the various tissues, it has been found that the greatest proportion is located in the liver. While it is true, as Menkin has reported, that a greater quantity of iron is found in inflamed tissue than in the corresponding normal tissue, the quantity of iron going to inflamed tissue cannot account for the severe drain on iron which occurs in the presence of infection. Investigators are seeking to learn the nature and cause of this disturbance in the metabolism of iron. With regard to the diagnosis of anemia, I would like to make a plea to the physician to acquire the habit of looking at the blood smear of his patient himself. While he will never leave to an assistant the final examination of the heart or some other part of the physical examination, it is strange how even the most painstaking physicians are ready to leave the examination of the blood smear to a technician. Prophylaxis is extremely important in the management of hemolytic disease of the newborn. A life may be saved if one is prepared by having been forewarned through having taken a satisfactory history from the prospective mother and having made subsequent appropriate examinations and preparations. If suitable blood for transfusion is available sufficiently soon, the child's life may be saved. In connection with the pathogenesis of hemolytic disease of the newborn the point may be made again that one must avoid giving blood transfusions indiscriminately and thus running the risk of building up anti-Rh or other agglutinins.

Dr. Carl V. Moore, St. Louis: I should like to add my tribute to that of Dr. Wintrobe to the four men who participated in this symposium. The task of reviewing so broad a subject in the time available was well performed. Dr. Zuelzer correctly emphasized the importance of oxygen tension as a regulator of the rate of red blood cell formation. It is well known that the lowered oxygen tension of high altitudes stimulates erythrocytogenesis. Several years ago it was possible to demonstrate that the reverse is also true: high oxygen tensions depress the red-blood-cell-forming elements in bone marrow. Patients with sickle cell anemia were given high concentrations of oxygen by face mask continuously for twelve days. Regularly, on about the sixth day of oxygen administration, the initially elevated reticulocyte levels began to fall to normal values. Shortly thereafter the red blood cell count also began to decrease; on several occasions, it was a million cells lower by the end of the period than it had been before the administration of oxygen was started. After the mask was removed on the twelfth day, there was a great outpouring of reticulocytes and a subsequent rise in the erythrocyte values. What Dr. Poncher has said about keeping iron therapy pure is extremely appropriate. There is no evidence to indicate that the addition of thiamine, riboflavin or any other vitamin to iron makes the iron more effective therapeutically unless a specific vitamin deficiency coexists. These combinations probably have been developed because physicians are dissatisfied with the effect of iron in the treatment of anemias. Iron is of value, however, only when a patient is deficient in iron; that is, when a hypochromic anemia is present. Under these circumstances it will work by itself. In the other forms of anemia iron deficiency is not a primary factor in pathogenesis and cannot be expected to be corrective, with or without copper and the various vitamins. Diagnosis and appreciation of etiologic factors can be sharpened considerably if use of the shot-gun iron preparations is avoided.

ALLERGIC PERITONITIS

Report of a Case

AGERICO B. M. SISON, M.D.
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and
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Several forms of allergy have been reported in the literature.[1] Among the commoner ones are hay fever, eczema, angioneurotic edema, gastrointestinal allergy, allergic migraine, serum sickness, urogenital allergy, nervous allergy, toxic allergy, drug allergy, allergic headache, bronchial asthma, ophthalmic migraine, some forms of dermatoses and periarteritis nodosa of allergic nature or in association with some other manifestations of allergy.[2] A careful search of our available literature on allergy has not revealed a reported case of allergic peritonitis. Although Harkavy[3] has reported 2 cases of "eosinophilic peritonitis," which our case closely resembles, yet there were present associated involvement of other organs in his cases. In the case here reported the involvement is purely peritoneal. The features, clinical signs and symptoms, laboratory observations and therapeutic responses are so distinctive of allergy that we venture to label this case as allergic peritonitis. Our fortunate discovery of this case may henceforth call attention to one form of allergy which has not been reported heretofore.

REPORT OF CASE

Mrs. V. J. L., aged 31, a married Filipino piano teacher, was admitted for the fifth time to the Philippine General Hospital, with a repetition of the attacks she had had previously.

Previous History.—First Illness: The first attack occurred four years ago, when some two weeks after her first delivery on Jan. 13, 1942 she suddenly experienced severe epigastric pain radiating over the whole abdomen and accompanied with nausea and vomiting, abdominal tenderness and rigidity. The pain was extremely severe; it made her double up, and it occurred in paroxysms at intervals of a few minutes. Blood examination revealed a leukocytosis of 20,000 with predominance of polymorphonuclears and eosinophils (15 per cent). She was, however, only slightly febrile (37.5 C., 99.5 F.). Because of the acute abdominal pain, the tenderness and rigidity over the abdomen (especially noticeable in the right lower quadrant) and the leukocytosis her illness was diagnosed as acute appendicitis, and she was operated on. To the surgeon's surprise, the appendix was normal. It was nevertheless removed. The most noteworthy observation, however, was the presence in the abdominal cavity of an undue amount of amber-colored, slightly turbid fluid, of which 1 liter was removed.

Second Admission: The wound healed normally, but the epigastric pain, nausea and vomiting persisted, increasing in intensity and frequency as the days passed. Associated with

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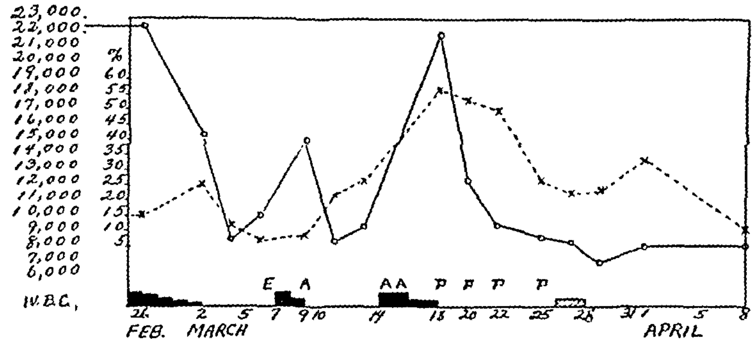
[1] Rowe, A. H.: *Clinical Allergy*, Philadelphia, Lea & Febiger, 1937.

[2] Rich, A. R.: Additional Evidences of Hypersensitivity in the Etiology of Periarteritis Nodosa, Bull. Johns Hopkins Hosp. **71:** 375 (Dec.) 1942. Rich, A. R., and Gregory, J. E.: The Experimental Demonstration that Periarteritis Nodosa Is a Manifestation of Hypersensitivity, ibid. **72:** 65 (Feb.) 1943. Rich, A. R.: The Role of Hypersensitivity in Periarteritis Nodosa as Indicated by Seven Cases Developing During Serum Sickness and Sulfanilamide Therapy, ibid. **71:** 123 (Sept.) 1942. Haining, R. B., and Kimball, T. S.: Periarteritis Nodosa, Am. J. Path. **10:** 349 (May) 1935. Mottley, L.: Periarteritis Nodosa, J. A. M. A. **106:** 898 (March 14) 1936. Spiegel, R.: Clinical Aspects of Periarteritis Nodosa, Arch. Int. Med. **58:** 993 (Dec.) 1936. Cohen, M. B.; Kline, B. S., and Young, A. M.: The Clinical Diagnosis of Periarteritis Nodosa, J. A. M. A. **107:** 1555 (Nov. 7) 1936.

[3] Harkavy, J.: Vascular Allergy, Arch. Int. Med. **67:** 709 (April) 1941.

these symptoms the patient noted a gradual increase in the size of her abdomen sufficient to cause some respiratory embarrassment. After three weeks she had to be readmitted. On this admission blood examination revealed a leukocytosis of 30,000 with 38 per cent eosinophils. A laparotomy was performed and some 3 liters of abdominal fluid was removed. Careful search did not reveal anything abnormal to account for the presence of fluid. Section of the peritoneum revealed no histologic abnormality save for congestion. Examination of the ascitic fluid revealed that it was in the nature of an exudate with high cellular count, high albumin percentage, high specific gravity and high eosinophilic count (38 per cent). Examination of the peripheral blood subsequently revealed a gradual lowering of the leukocyte and eosinophile counts during the next two months until the figures became normal. The laparotomy wound healed uneventfully and the symptoms of pain, nausea and vomiting subsided with the disappearance of the ascites. The disappearance of the clinical signs and symptoms coincided with the gradual return to normalcy of the leukocyte and differential counts. On account of the high eosinophilia, several stool examinations were done for intestinal parasites, but they were consistently negative.

Subsequent Course: On discharge the patient enjoyed comparatively good health and had no complaints whatsoever until after her second delivery in October 1943. The symptoms and signs, which were identical to those of her previous admissions, although less intense, were felt one month after her delivery. In view of our previous experience with her condition she was treated conservatively with sedatives for the pain and regular injections of dextrose and calcium. With this treatment alone she improved. Examinations of blood and of ascitic fluid revealed essentially the same picture as before, and their gradual return to normal kept pace with the clinical improvement. She went home improved and enjoyed good health until July 1944, at which time she was stricken with typhoid fever.



Correlation of hematologic data with abdominal pain and therapy. The unbroken line represents the total white blood cell count; the broken line, the eosinophil percentage; filled in area, abdominal pains; diagonally lined area, menses; A, epinephrine injections; E, estrone, and P, progesterone injections.

Present Illness.—History: In October 1945, which was the sixth month of her third pregnancy, she experienced the same symptoms as on her previous admissions. However, the symptoms were felt during and not after pregnancy, as they had been before. The symptoms were comparatively much less in intensity, and the abdominal enlargement seemed only commensurate with the stage of pregnancy. Examination of the blood revealed the same features as before though less in degree. No paracentesis abdominis was done this time. She improved on conservative management within a week.

Her present admission, which is her fifth, followed her last delivery on Jan. 31, 1946 by twenty-six days. The symptoms were first ushered in by epigastric fulness followed by severe pains which radiated downward towards the umbilicus. The pains were severe, paroxysmal and came at intervals of some three to five minutes. They were exacerbated by movements of the body and accompanied by nausea, vomiting of the ingested food and some respiratory distress. The symptoms increased in severity as days passed. Her husband, who is a physician, gave her intravenous injections of dextrose and calcium gluconate, but little relief was obtained. Twice she had to be given morphine for the pain. Gradually, it was also noted by the patient that her abdomen was increasing in size and that the sensation of fulness and bloating was becoming more pronounced. These symptoms did not abate, so she again sought admission. Just before entry, however, she had an extremely acute attack of pain that required morphine to quiet her.

As will be noted all the attacks followed a uniform clinical and laboratory pattern. No jaundice, melena, hematemesis or diarrhea was observed during any of these admissions.

Her condition on admission on February 26 was that of a slightly febrile (37.8 C., 100.04 F.) pale patient under the influence of morphine. She was slightly drowsy and answered questions sluggishly. She still complained of pain, though it was dulled by morphine. Appetite was absent, the bowels constipated, the pulse rate 86, the respiratory rate 20 and the blood pressure 120 systolic and 68 diastolic.

Physical Examination: Physical examination revealed essentially normal conditions except in the abdomen. The abdominal wall was slightly tense and hyperpigmented, with striae of pregnancy. Two scars, that of the appendectomy and that of the laparotomy, were visible. There was evident sagging on both sides. On palpation there was generalized moderate tenderness and rigidity, apparently increased in the right upper quadrant of the abdomen. There were unmistakable signs of ascites.

Previous Diseases: From childhood up to the age of 17 the patient had recurrent attacks of urticaria apparently brought about by the ingestion of sea foods. At the age of 19 she had an attack of moderate epigastric pain and vomiting which was diagnosed as acute gastritis. Examination of the blood done then revealed normal findings. At 21 years of age moderate pallor developed, and she had frequent attacks of dizziness which were diagnosed as due to secondary anemia. She took the contents of a bottle of pills of ferrous carbonate, which relieved her symptoms completely. In December 1939 she had rheumatic polyarthritis which responded to salicylate treatment and extraction of an abscessed tooth. Examination of the blood at this time revealed a white cell count of 12,000 with no eosinophilia. The patient had typhoid fever in July 1944, as stated previously.

Family History: A brother had a history of repeated urticarial attacks. Her father used to suffer from bronchial asthma. Her mother and sister had rheumatic polyarthritis. The results of leukocyte, differential and stool examinations done to these members of her family revealed normal conditions. However, these tests were performed when they were symptom-free.

Laboratory Examinations: Results of examinations of the blood are given in the hematologic studies and on the accompanying chart. Urinalyses were normal on several occasions. The feces were consistently negative for intestinal parasites. Bilirubin tests 1 and 2 and the Takata-Ara test were within normal limits. The cholesterol level was 166 mg. per hundred cubic centimeters. Blood smears for malaria were negative.

The ascitic fluid was light yellow, turbid, rather viscid and slimy. The total cell count was 5,040 with a differential of polymorphonuclears 63 per cent; lymphocytes 7 per cent; mesothelials 1 per cent; endothelials 5 per cent; eosinophils 12 per cent; basophils 2 per cent, and macrocytes, 10 per cent. Guinea pig inoculation of the ascitic fluid was negative, and culture of ascitic fluid was sterile. The sedimentation rate of the blood was normal.

Hematologic Studies: As will be seen in the chart, the white blood cell count ranged from 8,400 to 22,500, the highest count coinciding with the extremely severe pains on admission. During the attacks of pain there was a corresponding rise in the total white cell count.

The eosinophils ranged from 5.5 to 57 per cent. Unlike the behavior of the total cell counts, the increase in the percentage of eosinophils did not correspond with the attacks of pains. However, the eosinophils were observed to present atypical variations during the attacks of pains, as follows: First, the eosinophils were found hard to stain with Wright's, i. e., the granules did not have the crimson red and purple nuclei as seen in the normal smear. The cell seemed larger than the polymorphonuclear leukocytes when viewed side by side at the center of the smear. There were few vacuolations scattered irregularly around the periphery. The granules were pale pink, more numerous between the lobes of the nucleus and especially affecting those eosinophils with two nuclear lobes. All along the periphery there were scanty granulations, and between the center of the cell and the periphery the granules could almost be counted if there were facilities to do so. The cytoplasm was finely bluish and especially noticeable when there were no granulations.

This atypical appearance of the eosinophils gradually reverted to normal as the clinical signs and symptoms improved, only to be noted again with the return of abdominal pains. The same atypical appearance of the eosinophils was also observed in the ascitic fluid.

Course in the Ward: From admission on Feb. 26, 1946 to March 2, the patient had a low grade fever not above 38 C. (100.4 F.), with associated abdominal pains. Dextrose and calcium were given on alternate days. The pains were not felt from March 3 to 7. Estrone, 1,000 units, was injected at 10 a. m. of March 7, then at 5 a. m. March 8, very severe abdominal pains simulating those felt on admission were observed. Pains were felt subsequently on March 9, 14, 15, 16 and 17. Progesterone was subsequently given, after which no pains were felt. (See chart for better comprehension.)

COMMENT

Salient Features.—The salient features in this case are: (1) the presence of allergy and rheumatic diathesis in some members of the family, (2) the history of repeated attacks of urticaria in the patient, (3) the association of the symptoms with pregnancy and the puerperium (one attack occurred at the sixth month of her second pregnancy and 3 attacks occurred from two to four weeks postpartum), (4) the leukocytosis with eosinophilia during attacks, (5) the syndrome of acute pain in the abdomen during attacks, (6) evidences of ascites during attacks, (7) the intervals of comparative good health, (8) the exudative and eosinophilic character of the ascitic fluid and (9) the apparent absence of a septic focus in the abdominal cavity which could explain the preceding symptoms.

Differential Diagnosis.—In the differential diagnosis we had for consideration the following diseases:

1. Portal cirrhosis was ruled out by normal hepatic function, absence of splenomegaly, the periodicity of symptoms, the absence of evidences of collateral circulation, the exudative and eosinophilic nature of the ascitic fluid and the symptoms of acute abdominal distress.

2. Chronic nephritis was ruled out by the absence of symptoms referable to the urinary tract, normal urinalyses, normal blood pressure, the nature of the ascitic fluid, the periodicity of attacks and the exudative nature of the ascitic fluid.

3. Tuberculous peritonitis was ruled out by the absence of a pulmonary focus, the periodicity of the attacks, the eosinophilic nature of the ascitic fluid, the relative good health of the patient during the intervals and the negative result of guinea pig inoculation with the ascitic fluid.

4. Intestinal parasitism was considered on account of the eosinophilia, but the stool cultures have been consistently negative.

5. Trichinosis was considered because of the decided eosinophilia. Up to the present time no case of trichinosis in a Filipino has ever been reported. Even among the swine no case has yet been discovered by government veterinarians. Clinically, trichinosis can be ruled out by the absence of history of ingestion of raw pork, the absence of symptoms indicative of skeletal involvement, the periodicity of attacks and signs of ascites, which is not found in trichinosis.

6. Periarteritis nodosa [4] was most difficult to exclude, especially if we kept in mind that some cases of periarteritis nodosa are of allergic origin. The acute abdominal symptoms, eosinophilia in the blood and in the ascitic fluid were points in favor of a diagnosis of periarteritis nodosa. Against these were: the periodicity of symptoms; spontaneous remissions; association with pregnancy and the puerperium; absence of involvement of other organs, such as the liver, heart, spleen, kidneys and brain, and absence of evidences of thrombosis, infarction or aneurysm of the mesenteric vessels on laparotomy.

In this regard the report of Harkavy [3] may be mentioned. He described 2 patients with a syndrome of what he termed "eosinophilic peritonitis." These 2 patients (cases 6 and 7) presented, aside from the peritonitis, involvement of other organs such as the liver, lungs and heart, giving a picture of polyserositis of the nature of periarteritis nodosa. In the case herein reported there were no evidences of involvement of any other organ, save for a previous history of urticaria which, however, was apparently independent of the presenting signs and symptoms.

Mechanism of the Ascites.—The possible mechanism of the ascites could not be determined definitely, but we offer the following analysis.

The liver may first be considered. Ascites of hepatic origin may be produced by (*a*) passive congestion, (*b*) portal obstruction or (*c*) periarteritis nodosa with hepatic localization.

Passive congestion was ruled out by the absence of hepatomegaly, cardiac disease, hypoproteinemia or any other condition that may give rise to chronic passive congestion. The exudative and eosinophilic nature of the ascitic fluid, the periodicity and the presence of severe pains were all against this possibility.

Portal obstruction may either be thrombosis or phlebitis. This was ruled out by the absence of splenomegaly, collateral circulation, periodicity of the attacks and the exudative and eosinophilic nature of the ascitic fluid.

The liver as the seat of periarteritis nodosa has been reported.[5] While this possibility may be entertained, yet the periodicity of the attacks, the normal hepatic function, the spontaneous remissions, the association with pregnancy and the puerperium were against such a possibility.

By exclusion, the only logical thing to suspect was the peritoneum, that is, a peritonitis which was proved aseptic by culture and inoculation.

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[4] Arkin, A.: Clinical and Pathological Study of Periarteritis Nodosa, Am. J. Path. **6:** 401 (July) 1930. Mainzer, F., and Joel, W.: Periarteritis Nodosa as a Manifestation of Sepsis Lenta Due to Streptococcus Viridans, Acta med. Scandinav. **85:** 397, 1935. Friedberg, C. K., and Gross, L.: Periarteritis Nodosa Associated with Rheumatic Heart Disease, Arch. Int. Med. **54:** 170 (Aug.) 1934. Krupp, M. A.: Urinary Sediment in Visceral Angiitis (Periarteritis Nodosa, Lupus Erythematosus, Libman-Sacks "Disease"), ibid. **71:** 54 (Jan.) 1943. Carr, J. G.: Periarteritis Nodosa, M. Clin. North America **13:** 1121 (March) 1930. Scupham, G. W., and Kinney, J. R.: Periarteritis Nodosa, M. Clin. North America, 1945. Kernohan, J. W., and Woltman, H. W.: Periarteritis Nodosa, Proc. Staff Meet., Mayo Clin. **12:** 554 (Sept. 1) 1937. Kerton, L. W., and Bernstein, J. C.: Cutaneous Manifestations of Periarteritis Nodosa, Arch. Dermat. & Syph. **40:** 929 (Dec.) 1939. Harris, A. W.; Lynch, G. W., and O'Hare, J. P.: Periarteritis Nodosa, Arch. Int. Med. **63:** 1163 (June) 1939. Banowitch, M. M.; Polayes, S. W., and Chaol, R.: Periarteritis Nodosa: Report of Five Cases, Ann. Int. Med. **16:** 1149 (June) 1942.

[5] McCall, M., and Pennock, J. W.: Periarteritis Nodosa: Our Present Knowledge of the Disease, Ann. Int. Med. **21:** 628 (Oct.) 1944. Pass, I. J.: Infarction of the Liver, Am. J. Path. **11:** 503 (May) 1935. Spiegel, R.: Clinical Aspects of Periarteritis Nodosa, Arch. Int. Med. **58:** 993 (Dec.) 1936. Kountz, W. B.: Periarteritis Nodosa, Arch. Path. **10:** 55 (July) 1930. Klotz, O.: Periarteritis Nodosa, J. M. Research **37:** 1 (Sept.) 1917.

The Allergen.—We are not in a position to define the possible allergen in this case. One outstanding fact, however, is that the symptoms were always associated with pregnancy and the puerperium. Once the symptoms were felt at the *sixth month of the third* pregnancy and thrice they were felt two to four weeks after delivery. These observations seem to suggest the possible role of the gonadotropic and/or sex hormones in the etiology of the allergy. On account of our lack of facilities to determine blood or urinary gonadotropic or sex hormones, however, we were not in a position to define specifically the role of said hormones in the phenomena observed. In an attempt to ascertain the role of the sex hormones in the etiology of the case we undertook some simple procedures guided only by clinical observations, which fall short in scientific accuracy in such investigations as these.

After a few days, when the patient no longer felt the pain and was resting comfortably, an injection of estrone was given. The resident physician in charge was instructed to administer intradermally 0.1 cc. of the *2,000 unit strength of estrone. Through inadvertence* 1 cc. of the medicament was given subcutaneously into the right forearm. After eighteen hours there developed a reaction to the injection, and it consisted of severe abdominal pains similar in character and degree to the pains which the patient had felt on admission. These pains, however, responded dramatically to an injection of 0.5 cc. of a 1 : 1,000 solution of epinephrine. She again had pains of a similar nature on the second, fifth, sixth, seventh and eighth day after receiving the injections of estrone. These pains were alleviated promptly by injections of epinephrine. On the ninth day, we began to give her injections of progesterone every other day for five injections, and since then the abdominal pains have never recurred. Also there was observed a gradual decrease in the size of her abdomen. For purposes of provocation, another injection of 2,000 units of estrone was given after sixty days, and no pain was elicited.

On the site of the first injection of estrone a large erythematous area about 6 by 4 inches (15 by 10 cm.) developed, which discoloration persisted up to the third month's stay. That this local reaction was not due to the solvent of estrone (peanut oil) was demonstrated by the absence of local reaction on the site of the control injection.

Analysis of the Results of These Tests.—With regard to the preceding tests a series of questions may be asked. Was the pain elicited by the injection of estrone causal or casual? If it is causal, why did not the second injection of estrone produce a reaction? Could the second injection of estrone have been so modified or nullified by the preceding injections of progesterone that no reaction supervened?

Or was the lack of progesterone the factor responsible for the phenomena observed in this case, as evidenced by the cessation of pains after progesterone administration? Or was a disturbance of the complicated estrin-progestin metabolism the cause of the allergy? Or were the observations resulting from these tests purely coincidental, as evidenced by the cessation of the pains at about the same time as during previous admissions?

No specific answers can be given. Any attempt on our part to deduce conclusions on such paltry observations will border on mere suppositions without scientific accuracy. However, the preceding observations, coupled with the association of the pain with pregnancy and the puerperium, may warrant the suggestion that the disturbance in the estrin-progestin metabolism was *partly if not totally responsible* for the allergic manifestations.

SUMMARY

A case of allergic peritonitis is reported. The salient features are: recurrence of symptoms in association with pregnancy and the puerperium; the syndrome of acute abdominal pain during the attacks; the presence of ascites during each attack; eosinophilia in the peripheral blood and in the ascitic fluid; evidences of noninvolvement of other abdominal organs; response of the abdominal pains to the administration of epinephrine; a *strong familial and personal history of allergy*, and an apparent relationship to the complicated estrin-progestin metabolism.

This case may call attention to one form of allergy heretofore unreported.

BENADRYL IN THE TREATMENT OF CERTAIN DISEASES OF THE SKIN

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In the last year a new drug, beta-dimethyl aminoethyl *benzohydryl ether* hydrochloride (Benadryl hydrochloride[1]) has become available for clinical investigation and, more recently, for therapeutic use. This compound was prepared by Loew and his associates.[2] It belongs to a distinct pharmacologic group and is believed by its originators to have an antihistamine action. Experimentally, it relieves histamine shock and anaphylactic shock in the guinea pig and exerts an antispasmodic action on smooth muscle. It is a white crystalline powder, soluble in alcohol or water, and can be administered orally or intravenously. We have administered Benadryl to a large group of patients who have had dermatoses characterized by cutaneous edema, such as urticaria,[3] acute or early scleroderma including acrosclerosis and atopic dermatitis. It is the purpose of this report to discuss the results obtained in the treatment of these disturbances with Benadryl and to comment on some of the clinicopharmacologic properties of this drug.

URTICARIA

Urticaria, or "hives," is a condition characterized by localized accumulations of fluid in the skin or mucous membranes. It results from temporary pathologic permeability of blood vessels. Angioneurotic edema or giant urticaria is essentially the same process, except that the subcutaneous tissues are involved and the lesions may occur in the mucosa of the nasopharynx, larynx, bronchi or bladder. Whether the condition is urticaria or angioneurotic edema, whealing is the basic pathologic manifestation.

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[1] *Benadryl was supplied by the manufacturers,* Parke, Davis & Company, Detroit 32.

[2] Loew, E. R.; Kaiser, M. E., and Moore, V.: Synthetic Benzhydryl Alkamine Ethers Effective in Preventing Fatal Experimental Asthma in Guinea Pigs Exposed to Atomized Histamine, J. Pharmacol. & Exper. Therap. **83**: 120-129 (Feb.) 1945.

[3] O'Leary, P. A., and Farber, E. M.: Benadryl in the Treatment of Urticaria, Proc. Staff Meet., Mayo Clin. **20**: 429-432 (Nov. 14) 1945.

Acute urticaria which follows the injection of a biologic product or the ingestion of food, drugs and the like may last for a few days to a few weeks and usually subsides spontaneously without treatment. When Benadryl is administered, however, relief of the pruritus usually occurs in twenty to sixty minutes, with reduction of the swelling in from two to six hours. We prescribed Benadryl to be taken by mouth every three to four hours in doses varying from 50 to 100 mg. for 35 patients who had acute urticaria. Twenty of these patients were completely relieved in from one to two days; the condition of 12 was improved, meaning that the pruritus receded and that there were fewer, smaller wheals, and 3 patients were not benefited. Side reactions occurred in 10 of the 35 patients but were not severe enough to warrant discontinuance of Benadryl, although this might have become necessary in several instances if recovery from urticaria had not been so prompt.

Chronic urticaria may last for many years; when it does, the cause is more obscure than that of the acute phase of the disease. Patients who have chronic urticaria often are regarded as suffering from fatigue states, although occasional cases are encountered in which illness is the result of visceral disease. The patient who has hives chronically may be wholly or partially incapacitated because of intense itching, insomnia and disfigurement. Wise and Sulzberger[4] have said, that ". . . despite the most thorough 'work-ups' under conditions of the most perfect collaboration . . . most chronic cases [of urticaria] remain unsolved. They run their mysterious course of months or years, often to cease as suddenly and as unexpectedly as they started."

Treatment on the whole has heretofore been ineffective and has consisted of numerous empiric methods. A review of the histories of 75 patients who had chronic urticaria elicited an array of therapeutic agents which they had received or methods with which they had been treated.

Occasionally, some of these forms of treatment have been of curative or palliative value in individual cases, but no single treatment has been of consistent benefit. Moreover, in the evaluation of any remedy for urticaria, study of a large number of patients is necessary, for the condition often subsides spontaneously. The impressive number and variety of treatments which Benadryl replaces are seen in table 1.

With the recent discovery of drugs which possess an antihistamine action,[5] it is now possible to give striking palliative relief to most patients who have chronic urticaria. Of 75 patients treated, 48 were entirely relieved while they were taking Benadryl, 17 had fewer lesions and less pruritus and 10 obtained no benefit. Substitution of placebos or discontinuance of therapy resulted in prompt recurrence of the lesions. Twenty-five patients, or a third of those treated, complained of varying degrees of side reactions to Benadryl, but only 8 of these reactions were of sufficient severity to justify discontinuance of administration of the drug.

The following 2 cases are reported as typical examples of the response of chronic urticaria to Benadryl hydrochloride.

REPORT OF CASES

CASE 1.—A white woman aged 29, a housewife, consulted the section of dermatology of the Mayo Clinic on July 11, 1945 because of generalized urticaria and angioneurotic edema of four months' duration. Lesions occurred during the day or night and often lasted six to fourteen hours. Frequently swellings occurred in the patient's tracheobronchial tree and produced severe dyspnea. Dietary factors were not involved, and results of numerous skin tests had been negative.

Ten minims (0.62 cc.) of epinephrine taken hypodermically gave some relief, but all other forms of treatment, including rigorous elimination diets, sedative agents and the like, had been valueless. For ten months in 1941 the patient had had the same disturbance, but it had ceased spontaneously after dilatation and curettage, which had been carried out because of the increased premenstrual severity of the urticaria. There was no history of infantile eczema, hay fever or asthma in the patient or in her family.

The patient was a well developed and well nourished white woman with multiple pea-sized to palm-sized urticarial wheals asymmetrically distributed over her arms, trunk and thighs. A severe grade of dermographia appeared after the exertion of linear pressure on the skin. Foci of infection were not demonstrated. Results of physical examination and of extensive laboratory studies were not significant.

TABLE 1.—*Therapies Previously Used in Treatment of Seventy-Five Patients Who Had Chronic Urticaria*

Diets

Milk
High protein—low sodium
Acid ash
Bread and water
Rowe elimnation diet

Oral Medicaments

Arsenic
Balsam
Belladonna
Bromides
Calcium
Emetics
Ephedrine
Ergot
Fluids
Histaminase
Hydrochloric acid
Nitrites
Pancreatic extracts (deinsulinized)
Pilocarpine
Purgatives
Quinine
Salicylates
Salt
Sedatives
Sodium nitrites
Strychnine
Sulfonamide drugs
Thyroid
Turpentine
Vitamins

Injections

Epinephrine
Atropine
Autohemotherapy
Desensitization
Hormones

Procedures

Baths (alkaline, acid, etc.)
Rest cures
Change of climate
Psychiatric care
Lotions, salves, etc.
Skin tests

Vaccines

Escherichia coli
Streptococcus vaccine

One hundred milligrams of Benadryl was prescribed for the patient, to be taken three times a day, after each meal. The patient was seen a week later and stated that she had not had hives since taking the drug. She was advised to discontinue the treatment, which she did, but she returned three days later with numerous lesions on her legs, thighs and trunk. With the resumption of therapy she again became free of all urticarial wheals. After the first month of treatment the amount of Benadryl taken was decreased to 150 mg. a day, with equally effective results. Wheals promptly recurred whenever she discontinued the therapy.

This patient had suffered from hives for four months before an effective palliative remedy was prescribed. She must, however, continue to take Benadryl every day, or the lesions will reappear. To the time of this report, she has taken the drug almost every day for ten months, or a total of approximately eight hundred to nine hundred capsules. The cause of the urticaria could not be found.

CASE 2.—A white man aged 20 came to the Mayo Clinic on May 22, 1945 because of severe angioneurotic edema of seven months' duration. He stated that palm-sized swelling occurred almost every day, involving at various times his eyes, lips, tongue, throat, hands, feet and genitals. The lesions were exceedingly pruritic, often painful and lasted several hours to several days. Past treatment, including the taking of epinephrine, the use of elimination diets, succinylsulfathiazole and other measures, had been valueless.

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[4] Wise, F., and Sulzberger, M. B.: The 1936 Year Book of Dermatology and Syphilology, Chicago, The Year Book Publishers, Inc., 1936, p. 17.

[5] Mayer, R. L.; Huttrer, C. P., and Scholz, C. R.: Antihistaminic and Antianaphylactic Activity of Some α-Pyridinoethylenediamines, Science **102**: 93-94 (July 27) 1945.

Careful interrogation of the patient and the results of extensive laboratory and physical investigations did not reveal a plausible etiologic factor, but fatigue was considered to be a contributing cause.

The patient was given 50 mg. of Benadryl three times a day for two weeks. During this time he was entirely free of angioneurotic edema. On discontinuance of administration of the drug, there was prompt recurrence of the lesions, but when its administration was resumed he once more remained free of lesions for four weeks. He then, on his own volition, discontinued the therapy. When he was seen at the clinic four weeks later, he stated that urticaria had not recurred.

The foregoing case is of interest in respect to two points. First, it indicates that Benadryl gave striking symptomatic relief; second, it illustrates that urticaria may subside spontaneously.

Benadryl has a wide margin of safety and can be taken for many months in succession without deleterious results. It is just as effective in controlling urticaria in the fourth or fifth month of use as it is in the first. The following 10 cases are illustrative of this.

CASE 3.—A white man aged 41 had had chronic urticaria and angioneurotic edema for eight months prior to registration at the Mayo Clinic. He now takes 150 mg. of Benadryl a day and to the time of this report has been entirely free of lesions for eight months. Discontinuance of administration of the drug results in prompt recurrence of the urticaria. There have been no unpleasant side reactions.

CASE 4.—A white man aged 69 who had had chronic urticaria and angioneurotic edema for two and a half years came to the clinic, where 100 mg. of Benadryl a day was prescribed. He became entirely free of lesions for the first time in two and a half years. Substitution of placebos resulted in the occurrence of new lesions. To the time of this report he has been taking the drug for six months and has not had any side reactions.

CASE 5.—A white woman aged 25 had had urticaria and angioneurotic edema for fourteen months. She remained free of hives only so long as she took 100 mg. of Benadryl three times a day, but she became drowsy after she had taken each capsule. After four months of Benadryl therapy she required only 100 to 150 mg. a day and no longer complained of being drowsy.

CASE 6.—A white woman aged 26 complained of angioneurotic edema and chronic urticaria of six weeks' duration. Three 50 mg. capsules of Benadryl a day suppressed all lesions but produced dizziness, dilated pupils and dryness of the mouth. To the time of this report she has taken 150 mg. of the drug each day for eight months. She reports that when she does not take Benadryl for a day the lesions recur. She still complains of slight dizziness and dryness of her mouth.

CASE 7.—A white man aged 56 came to the clinic because of generalized hives which had occurred daily for thirty years. Innumerable types of therapy had been administered without value. Two hundred milligrams of oral Benadryl each day resulted in complete freedom from urticaria. The patient complained of dryness of his mouth from the capsules. Four 50 mg. capsules controlled the urticaria, three capsules would partially control it, but two capsules would not control it at all. After taking the drug for four weeks, this patient complained of severe drowsiness and was forced to discontinue the medicament.

CASE 8.—A white woman aged 29 who had had urticaria for two years complained of dilated pupils and bradycardia which resulted from taking 300 mg. of Benadryl a day. No lesions were present when this dosage was employed. She remained free of symptoms while receiving 150 mg. of the drug a day and had no side reactions. To the time of this report she has taken Benadryl for eight months and requires from one to three 50 mg. capsules a day. Urticaria reappears if she does not take the drug every day.

CASE 9.—A white woman aged 59 who had had chronic urticaria and angioneurotic edema of nine months' duration received symptomatic relief from the taking of 150 mg. of Benadryl a day for seven months. No side reactions were present at any time. On one occasion angioneurotic edema of the throat was promptly relieved by the taking of 100 mg. of the drug.

CASE 10.—A white man aged 49 who had had urticaria and angioneurotic edema for four months obtained complete relief by taking 150 mg. of Benadryl a day, but he became "jittery" after taking each capsule. To the time of this report he has taken the preparation for five months but still complains of being "jittery" for about one hour after each dose of the drug. Nevertheless, he prefers this reaction to the unpleasantness of urticaria.

CASE 11.—A white woman aged 43 complained of hives of three years' duration. She obtained complete relief from the lesions by taking 100 to 250 mg. of Benadryl a day for eight months. No side reactions were observed during this time, and the drug was as effective in aborting or preventing lesions at the end of eight months of therapy as it had been early in the course of treatment.

CASE 12.—A white man aged 32 stated that for six and a half years he had had hives and swellings in his throat, which occurred almost every day. One hundred milligrams of Benadryl given four times a day made him dizzy and weak. The dosage was decreased to 50 mg. three times a day, with resultant control of the urticaria. The patient has received the drug for six months, to the time of writing, and has been able to decrease the amount to from 50 to 100 mg. a day. This gives him complete freedom from urticaria. In five months, he has reported, he has had only one attack of hives, and he has not experienced any further side reactions to Benadryl.

ATOPIC DERMATITIS

We used Benadryl in the treatment of atopic dermatitis because of the frequent concomitant occurrence of cutaneous edema, white dermographia, hay fever and asthma in this disturbance.

It is difficult to evaluate our results, because Benadryl seldom was the only remedy prescribed. Patients who have generalized eczematoid changes usually are instructed to take soothing baths and to use wet dressings, antipruritic lotions and similar measures. Benadryl was prescribed as an adjunct to other forms of therapy for 25 patients who had atopic dermatitis. It relieved severe paroxysms of pruritus for 8 of the 25 patients. Patients who have atopic dermatitis frequently experience itching more at night than during the day. Thus, if 100 mg. is taken at bedtime and drowsiness results as a side reaction, it is not an unwelcome reaction. If relief from pruritus is not obtained within the first few days there seems to be little justification for continued use of Benadryl. Aside from the fact that the drug decreased the severity of paroxysms of pruritus for 8 patients, we did not observe any other benefits accruing from its use.

PRURITUS ARISING FROM OTHER CAUSES

Benadryl is not an effective antipruritic drug. It afforded relief to only 6 of 38 patients who suffered from itching due to various causes, such as contact dermatitis, jaundice, toxic pruritus, psoriasis, dermatitis herpetiformis, so-called neurogenic pruritus and the like.

SCLERODERMA AND ACROSCLEROSIS

In the presence of scleroderma and acrosclerosis, edema may be the earliest change seen in the skin. Edema produces stiffness and limitation of motion and may last for varying periods before sclerosis and atrophy occur. Because we were able with Benadryl to decrease or prevent the development of edema in the presence of urticaria, it occurred to one of us (O'Leary) that a similar mechanism might decrease the edema which occurs in scleroderma.

Nine patients who had acrosclerosis and 4 who had scleroderma received Benadryl by mouth in amounts varying from 200 to 800 mg. a day. A chief complaint of the acrosclerotic patients was their inability to flex their fingers or to make a fist. During the first two weeks of therapy 7 of the 9 patients who had acrosclerosis were able, because of the rapid disappearance of edema from their hands, to bend their fingers and to make a fist. Sustained benefit, however, was observed in only 2 of these 9 patients. Of the 2 patients who obtained sustained symptomatic benefit from taking Benadryl, one was a 65 year old woman who complained primarily of stiffness and swelling of her hands. After Benadryl therapy alone, increased mobility of her hands developed, and in a week she was able to flex her fingers. She remained without pain or swelling of her extremities for five months, at the end of which period she discontinued therapy. In a short time the swelling, cyanosis and pain returned, but with the resumption of Benadryl therapy she again gained symptomatic relief. At the date of this report she is still doing well. She has had a total of seven months of treatment.

Table 2.—*Side Reactions to Benadryl*

Condition	Patients Treated	Side Reactions
Chronic urticaria	75	25
Acute urticaria	35	10
Atopic dermatitis	25	8
Scleroderma	13	5
Miscellaneous	38	10
Total	186	58 (31 per cent)

The second patient with acrosclerosis who improved definitely was a 24 year old waitress who complained of stiffness and swelling of her face, chest and hands. Small painful ulcers were present on the tips of her fingers. To the time of this report she has received 500 mg. of Benadryl a day for six months. At present the ulcers are healed, the patient is able to make a fist, softening of the skin in the affected areas has ensued, and she is able to work.

TOXICITY

Side reactions of varying degrees developed among 58 of 186 patients (31 per cent) who received Benadryl (table 2). The side reactions in order of frequency were drowsiness, dizziness, weakness and dryness of the mouth. Some patients complained of being "jittery," "on edge," "nervous," "confused," "poorly coordinated," "nauseated" and "excited."

Side reactions usually occur during the first few days after the administration of the drug is begun and frequently diminish in severity or disappear entirely after several weeks of therapy. "Late" side reactions developed among only 10 patients. These occurred for the first time after several months of daily use of the drug. Symptoms of toxicity promptly disappear when the drug no longer is administered. Ten patients were not able to use Benadryl because it apparently caused unusually severe dizziness and drowsiness.

COMMENT

Treatment of urticaria and allied dermatoses should begin with small doses of Benadryl, such as 50 mg. administered three times a day. The amount should be increased gradually until the minimal maintenance dose has been determined. Conversely, patients may require 300 to 400 mg. of the drug a day for several weeks but frequently are able to decrease the amount gradually until smaller doses become equally effective.

Benadryl does not seem to exert a cumulative action, for urticarial lesions promptly reappear when administration of the drug ceases. If relief is not obtained within the first few days, it is unlikely that Benadryl will subsequently be of value, and administration of it should be discontinued. In our ten months' experience with the drug manifestation of cutaneous sensitivity has not been observed, nor is there any evidence to date that it is habit-forming.

Indiscriminate use of Benadryl should be discouraged, for severe side reactions sometimes occur, such as loss of judgment or confusion.

SUMMARY

Benadryl is highly effective in the treatment of acute urticaria, chronic urticaria and angioneurotic edema, but relief is obtained only while the drug is being used. The drug decreases the severity of paroxysms of pruritus for some patients who have atopic dermatitis but is not a potent antipruritic drug. The condition of patients in the edematous phase of scleroderma is temporarily improved; such patients are able, by virtue of suppression of cutaneous edema, to achieve increased mobility in their extremities. Side reactions occurred among 31 per cent of the patients in this study but were severe enough to warrant discontinuance of the administratioin of Benadryl to only 10 patients.

Little Strokes That Go Unrecognized.—In the case of older persons, cerebral arteriosclerosis is perhaps the commonest cause for fatigue and misery and a nervous breakdown. Particularly disabling are the little strokes that so often go unrecognized. Many of them come in the middle of the night. Commonly they are thought to be heart attacks or attacks of Ménière's disease. The gastroenterologist sees many of these patients because so often with the cerebral thrombosis there is a wave of distress which shoots into the abdomen. Often it goes into the thorax, and then the tentative diagnosis may be heart disease. To diagnose the little strokes one must keep thinking of them, and then one may be able to draw forth the typical story of sudden onset and big character change. Often one can get this story only from the family or business associates. Only they will tell of the nervous breakdown, the changes in behavior, the increased irritability, the forgetfulness and the tendency to weeping and depression. The thing to remember is that, with the exception of carcinoma of the pancreas, there is no disease in the abdomen that can quickly change a person's whole character.—Alvarez, Walter C.: What Is the Matter with the Person Who Is Always Tired? *Northwest Medicine,* June 1947.

Clinical Notes, Suggestions and New Instruments

HAVERHILL FEVER DUE TO STREPTOBACILLUS MONILIFORMIS TREATED WITH STREPTOMYCIN

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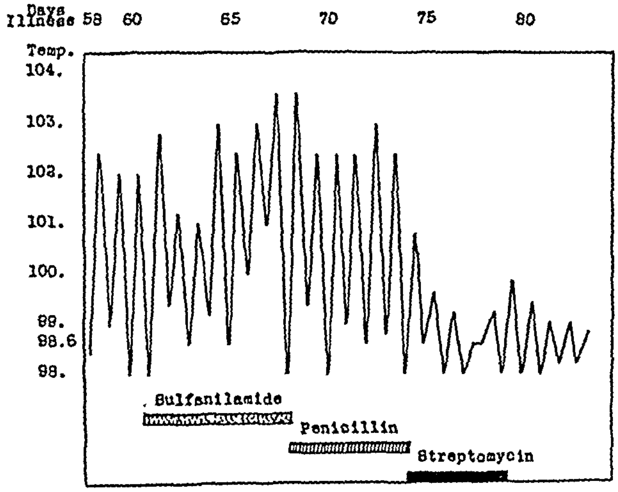
Haverhill fever, epidemic arthritic erythema, was diagnosed by blood culture in a white man 38 years old, a welder by occupation. Observation began May 25, 1946 and has continued to date. Streptomycin was used by us in the treatment of Haverhill fever for the first time, as far as we are able to determine.

REPORT OF A CASE

History.—B. W., a white man aged 38, while welding in a small compartment of a ship on April 7, 1946, became nauseated, vomited once and had diarrhea for twenty-four hours. He stayed home for two days and then returned to work in spite of weakness, chills, rises of temperature and night sweats. The temperature established no pattern except to rise in the early evening, and this was not a daily occurrence until May 18, when pain in the legs began.



The effect of streptomycin on temperature.

The pain was intense and was located deeply back of the tibias. It was also present back of the knee joints and in the ankles, yet seemed not to involve all these joints at the same time. Swelling of the joints was not noticeable. In the evenings the patient would first notice the feeling of fever, then in an hour or so the pain in the legs, which continued with sleeplessness until late morning. No rash made its appearance. Cough was present with a little expectoration. The weight dropped to 127 pounds (58 Kg.) from 140 pounds (63 Kg.). Moderate urinary frequency was present without dysuria. The appetite was poor, but eating did not lead to an overfilled sensation. The color of the stool was recalled as brown. There was no shortness of breath or swelling of the feet.

The past history was characterized by an attack of diphtheria at the age of 8, subsequent to which valvular cardiac murmurs were noted. At the age of 27 and again when he was 28 he was treated for cardiac decompensation with rheumatic heart disease. However, vigorous activity was in no way limited until his present illness.

Examination.—Examination on June 4, 1946 showed a man of small stature, who appeared moderately ill and apprehensive. His attitude seemed to be that of seeking immobility, and attention directed to his lower extremities was resented. There was no cutaneous eruption at any place on his body. His right ankle looked swollen but was not red and was without extreme tenderness on pressure. Motion was resented in this joint, as well as deep pressure in the calves. Other joints were free of tenderness, swelling or restriction of motion.

The scalp carried a good coat of hair. The face showed numerous scars from acne. There was slight puffiness of the lower eyelids; the pupils were regular and equal and reacted to light. The conjunctivas showed no jaundice, and the palpebral membranes were light pink. The nasal passages were adequate with only slight exudate. Frontal and maxillary sinuses transilluminated. The teeth appeared good. The tongue was slightly coated, the pharynx was normal and the tonsils were small. The right ear drum was dulled.

The neck was not rigid; the thyroid was not enlarged and the trachea was in the midline. There were many shotlike glands in the posterior triangles.

There were two wartlike linear lesions in the right subclavicular region. The lung fields were resonant throughout and the bases descended in both axillas and in the back. Breath sounds showed no changes. The apex beat of the heart was in the seventh interspace on the left side and was slightly vigorous on palpation. The left border of the heart measured 12 cm. from the midsternum. There was a systolic mitral murmur, rather soft in character, that was transmitted to the left axilla. There was a soft systolic murmur at the aortic area. The peripheral arteries were soft. No definite glands could be felt in either axilla. The pulse rate was 98, the temperature 102.4 F. and the blood pressure 120 systolic and 80 diastolic.

There was slight distention of the abdomen and some rigidity of the rectus muscles. The spleen was not palpable. The left lobe of the liver was enlarged to about three fingerbreadths below the costal margin. This area was slightly tender. Some inguinal glands were enlarged. The prostate and the scrotal contents were normal. Superficial reflexes and the tendon reflexes were present and normal.

Laboratory Examination.—On the initial admission on June 4, examination of the blood revealed that the hemoglobin was 66 per cent, the red blood cell count 4,040,000 and the white blood cell count 10,000, with a normal differential pattern. Examination for malaria was negative. No stippling of the cells was seen. Subsequent examinations on June 15, 20, 21 and 27 showed a progressive anemia, the last blood count being hemoglobin 51 per cent, red blood cells 3,000,000 and white blood cells 13,600. The sedimentation rate was reported as 8 mm. (Wintrobe).

The urinalyses were negative on June 4 and 15 but on June 26 showed 4 plus albumin and 50 white blood cells per high power field. The urine cultures at the time of the pyuria showed Staphylococcus albus and Escherichia coli.

Roentgenograms of the chest revealed normal conditions, and stool examinations were negative. The electrocardiogram was normal. The blood Wassermann test was negative. Blood cultures carried out on June 4, 5 and 6 contained Streptobacillus moniliformis.

Physical signs of chronic rheumatic valvular disease suggested the possibility of endocarditis. Undulant fever was suspected until the positive blood cultures of Streptobacillus moniliformis were reported and the negative agglutination reactions for undulant fever were confirmed.

Investigation by the county health officer brought out the fact that the locker rooms where lunches were kept were overrun with rats.

Bacteriologic Data.—The Streptobacillus moniliformis[1] isolated was first noted as similar to bread crumbs, a growth appearing on the sedimented blood cells of a routine blood culture after six days' incubation. It is extremely likely that growth occurred before this time but was overlooked, because in two repeat blood cultures growth was noted on careful observation after forty-eight hours. It was a small, gram-negative bacillary or coccoid organism, rarely producing the filaments that are so characteristic, non-acid-fast and nonhemolytic, which required blood or serum for the maintenance of growth. Growth in serum broth was always from the bottom of the tube and extended up the sides. It was aerobic but was aided in its growth by carbon dioxide. It grew well on chocolate agar and thioglycollate semisolid mediums. It died out rapidly, usually on the third or fourth day in a medium which supported rapid growth. Acid without gas was produced in dextrose and maltose but not in sucrose and lactose. Colonies were discrete, circular and extremely small with raised umbonate centers with crenated edges.

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[1] Topley, W. W. C., and Wilson, G. S.: The Principles of Bacteriology and Immunity, ed. 2, Baltimore, William Wood & Company, 1936, chap. 13, p. 274.

Patient's Agglutination Response to the Organism.—The antigen used was prepared by growing the streptobacillus in serum broth for forty-eight to seventy-two hours, centrifuging at high speed for thirty minutes, decanting, resuspending the sediment in about one third the amount of isotonic sodium chloride solution, killing by subjecting to 52 C. for two hours and diluting to a usable antigen. As stated by Brown and Nunemaker,[2] until the organism has been cultured through fifty or sixty generations it is hard to prepare a homogenous antigen. Since the organism at this time had only passed the twenty-fifth or thirtieth generations it had a tendency to settle after overnight incubation at 52 C. However, it was possible to tell definite agglutination as against settling by resuspending the antigen by shaking. Agglutination tests submitted May 25, May 31 and June 19, 1946 which gave no reaction to Eberthella typhosa O, Salmonella paratyphi B, Brucella abortus, Proteus OX 19 and OX 2 antigens were positive for the Streptobacillus antigen all in the dilution of 1 : 1,280. Several checks were run with negative serums and with serums giving reactions to typhoid and undulant fever antigens, but none agglutinated the Streptobacillus antigen.

Therapy.—While awaiting the report of the blood cultures, sulfanilamide, 0.65 Gm., with sodium bicarbonate, 0.65 Gm., were administered to the patient for seven days. When the Streptobacillus was reported, the administration of penicillin, 30,000 units at three hour intervals was begun and continued for six days. The accompanying chart shows the lack of specificity of penicillin and the dramatic success of streptomycin administered in 0.3 Gm. doses at three hour intervals for five days.

Subsequent Course.—The third dose of streptomycin permanently relieved the pain in the legs, and the temperature remained normal thereafter, except for one day when 100 F. was reached because of pyuria. With the administration of penicillin, the patient's condition had seemed to become more grave.

The liver became more enlarged and decidedly tender on June 22, or about the sixtieth day of the disease, and some fluid seemed to have collected in the patient's abdomen. An albuminuria developed that lasted for another month. It persisted for two weeks after the pyuria had been cleared by the use of sulfathiazole, 0.5 Gm. four times a day.

Cultures of blood taken five days after the administration of streptomycin and again fourteen days later have been negative for any growth.

COMMENT

Haverhill fever is characterized by "an abrupt onset; a rubellaform to morbilliform eruption, chiefly on the extremities, and an inflammation of the joints with marked pain and tenderness." [3] The diagnosis is made by the isolation from blood or from articular fluid of a highly pleomorphic filamentous or spindle-shaped aerobic or microaerophilic gram-negative organism, Haverhillia multiformis, which requires serum for growth in artificial mediums.[4]

Parker and Hudson [5] were responsible for the creation of the name of the organism after study of the cases of Place, Sutton and Willner,[6] who reported in 1926 an epidemic in Haverhill, Mass., of a disease called by them erythema arthriticum epidemicum and Haverhill fever. The organism was the same as that isolated in 1925 by Levaditi and his co-workers [7] from a case of "acute erythema multiformis unassociated with rat bite" and named by them Streptobacillus moniliformis because of its distinctive morphology. Litterer [8] in 1917 obtained an organism from blood cultures of patients with rat bite fever; this he called Streptothrix longus and Streptothrix brevis, and he was the first also to use the term Streptobacillus. Schottmüller,[9] however, in 1914 was the first to describe adequately the Streptothrix which he cultured from the blood of a patient suffering from rat bite fever.

This briefly indicates the confusion attending the organism, when the Streptobacillus moniliformis is described in three languages under three different names and in three different diseases.

It is an apparent normal inhabitant of the nasopharynx of 50 per cent of laboratory rats and of wild rats. It has also been found in pulmonary lesions of rats. It is transmitted through contaminated milk, presumably, and also by the bite of rats. The organism seems to overshadow etiologically Leptospira morsus muris, also known as Spirillum minus, the highly mobile spirillum of uniform morphologic character which causes sodoku,[2] or rat bite fever.

Haverhill fever, as described by Place and Sutton,[3] has arthritis as the most persistent symptom, from the second to the thirteenth day of the disease, subject to remission and recurrences. In addition to definite involvement of the joints there is generalized pain in the legs and arms without local evidence in the joints. Chills usually precede the rash, which was noted in 13 per cent of their cases. Fever is always present, and often there are headache, sore throat and cough. Fever is usually septic, and the temperature returns to normal in one week; but this depends on the degree of articular involvement, and the fever may persist for months.

Treatment of the disease has included use of the sulfonamide compounds and penicillin. The former have been ineffectual, but Altemeier [10] has reported good results with penicillin in cases which were due to the bite of rats and were not Haverhill fever. In experimental animals Heilman and Herrell [11] obtained good results with penicillin. Here again they were dealing with Streptobacillus infections due to the bites of rats.

SUSCEPTIBILITY TESTS

Susceptibility of the Streptobacillus moniliformis to penicillin and streptomycin was carried out by two methods:

Impregnated Filter Paper Method.—No. 1 filter papers were cut into 10 mm. squares, sterilized and wet, in one instance with a solution of penicillin containing 1,000 units, 100 units and 10 units and in the other with a dilute solution of streptomycin. These were dried in a vacuum desiccator over calcium chloride. Serum agar plates were inoculated heavily over the whole surface with a young culture of the Streptobacillus moniliformis and with a young culture of a penicillin-sensitive Staphylococcus aureus. For the penicillin test the different strength papers were spaced across the diameter of the inoculated plates. Since only one strength of impregnated streptomycin paper was used, it was placed in the center of the inoculated plates. Incubation was in a candle can at 36 C., and results were read at forty-eight and seventy-two hours. From the greatest strength of penicillin-impregnated paper the staphylococcus was inhibited for a distance of 15 mm., while the streptobacillus was inhibited for a distance of not over 5 mm. At lower strengths, at which the staphylococcus was inhibited for 12 mm. and 10 mm., the streptobacillus was not inhibited at all. On the streptomycin plate this drug inhibited the growth of staphylococcus for a distance of 10 mm. and that of the streptobacillus for a distance of 17 mm.

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[2] Brown, T. M., and Nunemaker, J. C.: Rat-Bite Fever: Review of American Cases with Reevaluation of Etiology; Report of Cases, Bull. Johns Hopkins Hosp. **70:** 201-327 (March) 1942.

[3] Place, E. H., and Sutton, L. E., Jr.: Erythema Arthriticum Epidemicum (Haverhill Fever), Arch. Int. Med. **54:** 659-634 (Nov.) 1934.

[4] Farrell, E.; Lordi, G. H., and Vogel, J.: Haverhill Fever: Report of Case with Review of Literature, Arch. Int. Med. **64:** 1-14 (July) 1939.

[5] Parker, F., Jr., and Hudson, N. P.: Etiology of Haverhill Fever (Erythema Arthriticum Epidemicum), Am. J. Path. **2:** 357-379 (Sept.) 1926.

[6] Place, E. H.; Sutton, L. E., Jr., and Willner, O.: Erythema Arthriticum Epidemicum: Preliminary Report, Boston M. & S. J. **194:** 285-287 (Feb. 18) 1926.

[7] Levaditi, C.; Nicolau, S., and Poincloux, P.: Sur le rôle étiologique de Streptobacillus moniliformis (nov. spec.) dans l'érythème polymorphe aigu septicémique, Compt. rend. Acad. d. sc. **180:** 1188-1190, 1925.

[8] Litterer, W.: Study of the Streptothrix Isolated in Two Cases of Rat-Bite Fever, Tr. Sect. Path. & Physiol., J. A. M. A., 1917, pp. 275-287.

[9] Schottmüller, H.: Zur Aetiologie und Klinik der Bisskrankheit, Dermat. Wchnschr. (supp.) **58:** 77-103, 1914.

[10] Altemeier, W. A.; Snyder, H., and Howe, G.: Penicillin Therapy in Rat-Bite Fever, J. A. M. A. **127:** 270-273 (Feb. 3) 1945.

[11] Heilman, F. R., and Herrell, W. E.: Penicillin in the Treatment of Experimental Infection with Spirillum Minus and Streptobacillus Moniliformis: Rat-Bite Fever, Proc. Staff Meet., Mayo Clin. **19:** 257-264 (May 17) 1944.

Serial Dilution Method.—The medium used was thioglycollate semisolid, which supported a good growth of the streptobacillus at twenty-four hours. Duplicate serial dilutions were made of the two drugs used. One set was inoculated with a drop of a twenty-four hour growth of the streptobacillus, the other with a drop of a twenty-four hour growth of the staphylococcus. All tubes were incubated in a candle can at 36 C. and the results read at the end of twenty-four hours and again at forty-eight hours. The results obtained can best be seen from tables 1 and 2. Roughly speaking, the streptobacillus is sixteen times more resistant to penicillin and thirty-two times more susceptible to streptomycin than is the staphylococcus. In other words, the organism is decidedly resistant to penicillin and extremely susceptible to streptomycin. In the 3 cases reported by Altemeier and others[10] their results showed a slight difference in the susceptibility to penicillin in vitro of 1 of the 3 streptobacilli isolated. Our results suggest that considerable difference in susceptibility might occur in different strains of this organism, just as they do among the staphylococci. One might venture to say that the difference in results obtained in the treatment of infections caused by Streptobacillus moniliformis with penicillin could be due to the susceptibility or resistance of the strain involved.

TABLE 1.—*Susceptibility in Vitro to the Action of Penicillin*

	Growth			
	Streptobacillus Moniliformis		Staphylococcus Aureus	
Units of Penicillin per Cc of Medium	24 Hrs	48 Hrs	24 Hrs	48 Hrs
0.8	—	—	—	—
0.4	—	+*	—	—
0.2	—	+	—	—
0.1	+	+	—	—
0.05	+	+	—	—
0.025	—	+	—	+*
0.0125	—	+	—	+*
0.006	—	+	+	+
Control	+	+	—	+

* Growth less than in the control

TABLE 2.—*Susceptibility in Vitro to the Action of Streptomycin*

	Growth			
	Streptobacillus Moniliformis		Staphylococcus Aureus	
Dilution of Streptomycin 1 Cc. Contained 0.1 Mg.	24 Hrs.	48 Hrs.	24 Hrs.	48 Hrs.
1:2,500	—	—	—	—
1:5,000	—	—	—	+
1:10,000	—	—	+	+
1:20,000	—	—	+	+
1:40,000	—	—	+	+
1:80,000	—	—	+	+
1:160,000	—	+*	+	+
1:320,000	+	+	+	+
Control	+	+	+	+

* Growth less than in the control

CONCLUSION

We would emphasize that: 1. Streptomycin is definitely an effective agent against Haverhill fever. 2. Wild rats can infect food or milk in storage lockers. 3. An alert technician can isolate Streptobacillus moniliformis, though he may not be forewarned of its presence. 4. In vitro tests indicate that the streptobacillus causing Haverhill fever is highly susceptible to streptomycin therapy but resistant to treatment with penicillin.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, *Secretary.*

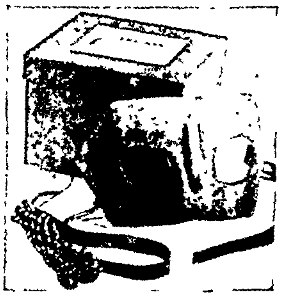
VAN VECHTEN THERMASK ACCEPTABLE

Distributor: Don Parkin Company, 5601 Hollywood Boulevard, Hollywood 28, Calif.

The Van Vechten Thermask provides a means of applying heat to the frontal area of the head and cheeks by controlled electric current. In appearance the appliance resembles a mask, which is attached to the head by means of a ribbon.

The device is constructed as follows: Nichrome wire is wound on a canton flannel base and attached to this base by the addition of a plastic solution (vinyl chloride) This coil is held between two cloth shells, which are also impregnated with the plastic, and the three pieces are joined together by the external application of heat and pressure. The finish is a flock application sprayed onto a urea resin synthetic enamel, making the unit moisture proof with high dielectric properties.

The device was investigated clinically by the Council. This investigation revealed that, for its limited purpose of applying heat to a restricted area, satisfactory results were obtained. This form of applying heat is no more beneficial than the use of an infrared lamp, an electric pad or any other form of applying external heat except that it may be more convenient. The device is useful in furnishing a uniform gentle heat. The Thermask carries the seal of the Underwriters' Laboratories, Inc.



Van Vechten Thermask.

The Council voted to accept the Van Vechten Thermask for inclusion in its list of accepted devices.

ACCEPTANCE OF RADIANT HEATERS

In considering radiant heat generators for inclusion in its list of devices acceptable for use in physical medicine the Council notes that, whereas the so-called "sunlamps" [1] emit a narrow spectral band of ultraviolet radiation of short wavelengths that have a specific biologic action, the radiant heaters of so-called "infrared lamps" emit a wide spectral band of radiation (predominantly of infrared rays) no part of which has a specific biologic action. Moreover, the depth of penetration of these rays into the body is superficial (1 to 10 mm.). Hence these infrared lamps cannot be used as an effective substitute for the diathermy apparatus.

It is further noted that there is no great difference in the spectral quality and the total intensity of the radiation emitted by infrared generators such as bath room heaters and those used in physical therapy. The main differences are the more elaborate adjustable mounting and the more costly finish which, for convenience in operation and for appearance as an office fixture, are incorporated in the professional models.

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[1] Acceptance of Sunlamps, J. A. M. A. **102:** 42 (Jan. 6) 1934, **114:** 325 (Jan. 27) 1940.

Two distinct types of infrared generators are available:

Type 1.—Tungsten or carbon filaments, heated to high incandescence, in a glass bulb that is mounted at the focus of a concave reflecting mirror; or the filament is inclosed in a conical bulb (of clear or red glass) in which the reflecting mirror is built on the inside of the funnel-shaped part of the glass inclosure. The maximum of spectral energy emitted by the gas-filled tungsten lamp is in the region of 10,000 angstroms. About 30 per cent of the total radiation emitted is of wavelengths that can penetrate deeply (1 to 10 mm.) into the skin.[2]

Type 2.—Infrared radiators of the second type consist of an electrically heated solid rod, or a resistance wire (usually of nickel-chromium alloy) embedded in, or wound on, a refractory material, usually porcelain. They are mounted in a concave bowl-shaped reflector and are operated at a red heat, with a maximum of spectral energy emission in the region of 20,000 angstroms to 40,000 angstroms in the infrared (see chart 1 of footnote 2). The bath room heaters in common use are of this type.

In contrast with ultraviolet generators there are no special hazards involved in the use of thermogenic generators (infrared lamps) by the public. The action of infrared radiation is thermal and instantaneous, producing a painful burning sensation if the intensity is too great. Hence there is no excuse for any one getting burned if ordinary care is used.

One of the main considerations involved in the acceptance by the Council of radiant heaters is compliance with the Fire Underwriter's Safety Code; including a wire screen placed over the lamp (in case of breakage) to prevent hot particles falling on the patient if the lamp is suspended over the bed.[2] The high powered (approximately 500 watts or more) infrared generators are intended to be operated at some distance (3 feet or more) from the bed. To reduce the hazard from burns and fire by contact, the reflector should be double walled to prevent overheating. The main fault with many of the infrared heaters is overheating of the porcelain socket that supports the heating unit, with the resultant oxidation of the metal parts and the lead wires at the juncture with the reflector.

The radiant flux (intensity) along with the axis of these lamps varies greatly with the diameter of the reflector, which in turn determines the area that is to be irradiated.

For example, the intensity of a prescription model unit, rated at 220 watts, in a reflector 9 inches in diameter at a distance of 36 inches was practically the same (30,000 to 40,000 microwatts [3] per square centimeter) as that of a 600 watt unit in a reflector 18 inches in diameter; but the area that was uniformly irradiated was much smaller.

In view of the foregoing considerations the Council will accept prescription model units consisting of an infrared radiator mounted on a mechanically stable pedestal stand (adjustable from 3 to 5 feet in height) that permits projection of the beam of radiation in various directions. For use over a bed the infrared lamp shall be provided with a safety wire screen. Furthermore, until a more satisfactory criterion for acceptability of infrared lamps is needed, the Council on Physical Medicine takes into consideration the energy input in the lamp as follows:

In type 1 (glass enclosed tungsten or carbon filaments, heated to high incandescence) the energy input shall not be less than 250 watts.

In type 2 (resistance units heated to a bright red incandescence as described [2]) the energy input shall not be less than 220 watts, preferably 550 watts or greater, depending on the intended use.

In applicator lamps the rated energy input shall be not less than 50 watts, to insure sufficient intensity without making contact with the affected part under irradiation.

In view of the plethora of infrared radiators on the market and the continuing increase in novelties in heating units, it is relevant to note that the Council's acceptance of a device is not to be construed as an aid in sales promotion.

Each new heating device will be considered on its merits.

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[2] Coblentz, W. W.: Sources of Ultraviolet and Infrared Radiation Used in Therapy, J. A. M. A. **132**: 378 (Oct. 19) 1946.

[3] Average summer sunshine is 1 gram calory per minute per square centimeter—70,000 microwatts per square centimeter.

Council on Foods and Nutrition

ACCEPTED FOODS

The following foods which are used primarily for restricted diets have been accepted as conforming to the Rules of the Council on Foods and Nutrition of the American Medical Association. James R. Wilson, M.D., *Secretary.*

FOODS FOR SPECIAL DIETETIC PURPOSES

The American Dietaids Company, Inc., Yonkers, N. Y.

Dietician Brand Butterscotch Flavor Pudding, containing rice flour, Irish moss extract, salt, artificial flavors, U. S. certified food color, soluble saccharin, dulcin and tricalcium phosphate.

Analysis (submitted by manufacturer).—Moisture 8.0%, ash 9.50%, fat (ether extract) 0.40%, protein (N × 6.25) 5.0%, carbohydrates 60.0%.

Calories.—2.80 per gram; 79.52 per ounce.

Dietician Brand Lowmay Salad Dressing, containing frozen egg yolks, salt, dulcin, cider vinegar, hydrogenated vegetable oil, water, spice oils and corn starch.

Analysis (submitted by manufacturer).—Moisture 77.40%, fat 12.0%, protein (N × 6.25) 1.0%, total carbohydrates 9.0%, total acidity as acetic acid 0.68%.

Calories.—1.50 per gram; 42.60 per ounce.

PLAN FOR ACCEPTANCE OF JUICES

In order to encourage the production of fruit juices containing high natural levels of vitamin C, the Council accepts orange juice in which at least 40 mg. of ascorbic acid per hundred cubic centimeters of juice is conserved.

The following product meets the standards and rules established by the Council for fruit juices.

James R. Wilson, M.D., *Secretary.*

FRUIT JUICE—ORANGE JUICE

The Cal-Grove Products Company, Los Angeles, Calif.

Cal-Grove Frozen-Fresh Orange Juice.

Analysis (submitted by manufacturer).—Soluble solids 13.5%, calories 0.40 to 0.50 per gram, ascorbic acid 43.4 mg. per hundred cubic centimeters.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin Smith, M.D., *Secretary.*

MANNITOL HEXANITRATE (See New and Nonofficial Remedies, 1946, p. 336).

The following dosage form has been accepted:

The National Drug Co., Philadelphia

Tablets Mannitol Hexanitrate: 30 mg.

ASCORBIC ACID (See New and Nonofficial Remedies, 1946, p. 631).

The following additional dosage form has been accepted:

Mead Johnson & Co., Evansville, Ind.

Tablets Ascorbic Acid: 50 mg.

TABLETS BUFFERED PENICILLIN (See The Journal, March 22, 1947, p. 851).

The following dosage form has been accepted:

E. R. Squibb & Sons, New York

Tablets Sodium Penicillin-G: 50,000 units and 100,000 units with 0.5 Gm. of trisodium citrate as a buffer.

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SATURDAY, JULY 19, 1947

PECULIARITIES OF THE CIRCULATION IN THE LUNGS AND HEART

In a recent Shattuck Lecture Dock[1] states that more progress has been made in the past thirty years in the quantitative study of the circulation of viscera than had been achieved in the previous three centuries. He predicts that the introduction of the vascular catheter and the use of radioactive isotopes will open a vast program of study of the circulation in various organs of normal and diseased men. While much of this advance was made possible by new technical methods, some of the data have been obtained by the injection or perfusion of organs post mortem by a technic that was possible even in the days of Harvey. A description of the circulation of an organ to be complete must include an estimate of oxygen needs, basal and maximal, the capacity of the vascular bed and the volume flow under varying conditions. The rates of flow during life in some organs can now be measured with accuracy.

Because the lungs occupy a large space and blood circulates through them at a relatively low pressure, posture greatly alters the quantity of blood in the apex and base or in the dorsal and ventral parts. Posture also alters the volume flow of blood through the lung. On reclining, the blood that fills the veins below the diaphragm is no longer held back by gravity, and the effective venous pressure, the quantity of blood in the lungs and the output of the heart are increased, the last by as much as 30 per cent in some subjects. Venous blood in the lungs must return to the left ventricle. Because of the effect of gravity on this flow, venous pressure at the bases is 20 to 30 cm. (expressed in its equivalent of water) greater than at the apex of subjects in the orthopneic position. When the patient is in the right semirecumbent posture the venous pressure in the lateral and basal parts of the right lung is 10 to 20 cm. higher than in any part of the left lung. These simple facts are of paramount importance in explaining the frequency of right-sided hydrothorax and of basal pulmonary edema, particularly in cases of cardiac failure. With the rise in venous pressure the flow of lymph also increases, and the removal of bacteria or dusts is most rapid at the base of the lungs. At the apex of the lung, not only is the venous pressure low but the arterial inflow is compromised when adults are sitting or standing. The fall in pressure along the course of the arteries is more definite on the right side because the right pulmonary artery arises at an acute angle from the direction of the flow in the pulmonic conus and pursues a tortuous path around the aorta. Consequently, Dock says, the apical fourth of the left lung and the apical third of the right lung can have practically no blood flow for two thirds of each day in the life of sedentary people. Antibodies formed by the body or antibiotics given parenterally will not reach this zone, and dusts, bacteria and toxins cannot be removed effectively from it when lymph flow ceases. As all this creates ideal conditions for tubercle bacilli, it is not remarkable that tuberculosis flourishes in this region. The high incidence of tuberculosis in congenital pulmonary stenosis, which greatly lowers pulmonic arterial pressure and the low incidence of active tuberculosis in mitral stenosis, with pulmonic pressure several times normal, supports the thesis that arterial inflow is of crucial importance.

The effect of gravity on the lungs thus explains the remarkable efficacy of rest flat in bed in the treatment of apical tuberculosis as contrasted with other types of the disease. Antibiotics will be least effective in reaching apical lesions when patients are allowed to sit up most of the day.

The peculiar relations of the pulmonary circulation to gravity are of great practical effect in the management not only of pulmonary tuberculosis but also of congestive heart failure. While the orthopneic posture makes life tolerable in heart failure it makes recovery impossible in apical tuberculosis.

The human heart probably never uses more than 0.1 cc. per gram of oxygen per minute; during vigorous activity the amount used is believed to be about 0.06 cc., a quantity that can be supplied by a blood flow of 1 cc. per minute. This leaves the venous blood still half saturated with oxygen and with an oxygen tension sufficient to allow diffusion of oxygen into the center of a muscle fiber twice the diameter of those in a greatly hypertrophied heart. Cardiac hypertrophy is a mechanism of great adaptability. In arterial hypertension of gradual evolution the left ventricular wall becomes thicker, but the diastolic capacity does not increase. While the muscular fibers are thicker, they are no longer than normal. However, when increased output must be maintained, as in hyperthyroidism or anemia, the muscle fibers grow longer and the chamber becomes more capacious.

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[1] Dock, William The Clinical Significance of Some Peculiarities of the Circulation in the Kidneys, Liver, Lungs and Heart, New England J. Med, May 22, 1947.

Does the coronary bed adapt itself to the growth of the myocardium? The perfusion of hearts with oil has yielded data on this important question. The coronary perfusibility per gram per tissue decreases as hearts grow from infancy to maturity. Dock found that the flow at ages 66 to 85 was 30 per cent less than at ages 25 to 40. It has been found that in cardiac hypertrophy without coronary disease the blood flow is more than adequate to provide oxygen in excess of the needs of the thickest fibers. The flow per gram also decreases in hypertrophied hearts, but it appears merely as a smooth extension of the curve of the decline in the normally growing heart up to maturity. While the coronary bed adapts itself to the needs of the heart, it is peculiarly liable to atherosclerosis, especially in populations using diets (such as ours) which have a large meat, milk and egg content. Nearly a fifth of the sedentary men of North America die because of vulnerability of the epicardial branches of the coronary system. Even when the aorta and the rest of the arteries are in faultless condition coronary occlusion may occur, particularly in men under 50 years of age. The coronaries at birth have thicker intimal layers than any other vessels of similar size in the body, and this natural thickness of intima increases throughout life. In newborn infants, Dock found that the males had far more striking intimal cushions than the females. This anatomic peculiarity may be the cause of the higher mortality and the earlier onset of coronary disease in males. The predilection of atherosclerosis for the coronary arteries in men and in certain families may therefore be due to an anatomic anomaly present at birth. Fortunately, the adaptability of the coronary circulation under stress imposed by disease is such that normal cardiac function may be maintained for years after the occlusion of the largest arteries in the heart.

VITAMIN A AND BONE GROWTH

Mellanby[1] demonstrated in animal experiments that deficiency of vitamin A in the diet of growing animals causes widespread degeneration of tissue in the nervous system. Of the cranial nerves the olfactory, the optic, the trigeminal and the auditory are reported as especially liable to suffer destructive changes. The dysplasia of bone which resulted from vitamin A deficiency and which was responsible for the grave effects on the nervous system could be largely, if not entirely, explained by altered osteoclastic and osteoblastic activity. The bone changes that result from vitamin A deficiency were demonstrated by Mellanby to be reversible. Soon after the addition of the vitamin the osteoclasts and osteoblasts again become active in their normal positions, the osteoclasts especially being numerous and active, as if making a special effort to remove the superfluous bone laid down or not absorbed in the period of vitamin A deficiency. The bones tend to return to normal.

The dysplasia due to vitamin A deficiency appeared to Mellanby to involve more or less all the bones of the body. Vitamin A, he asserts, plays a controlling part in the molding of all bones. Vitamin A when given in proper amounts insures that bone growth or bone molding proceeds along correct, predestined and safe lines; when the vitamin is deficient, growth continues in an orderly but wrong way, which leads to injury or even destruction of the nervous tissue and ultimately to the death of the animal. The restoration of vitamin A to the diet of the deficient animal quickly brought about a response in the bone cells directed to correct the dysplasia resulting from the absence of the vitamin. Mellanby points out that brain and cord cavities and the foramens which allow the passage of nerves to and from the central nervous system must enlarge to accommodate the growth of the nervous system. If vitamin A is deficient in the growing puppy, bone growth is so changed that the skull cavity and the spinal cord enlarge inadequately and irregularly and the foramens may even become smaller, with destructive results which may include destruction of the olfactory, optic, trigeminal and auditory nerves of the posterior routes of the spinal cord.

Wolbach and his co-workers confirmed in rats the destruction of nervous tissue by bone pressure produced by vitamin A deficient diets, but their interpretation of the cause of the bone pressure differed from that of Mellanby. Wolbach presents evidence[2] which indicates that remodeling sequences attending growth of bone are induced by a factor elaborated in the maturation of epiphysial cartilage cells. He stresses that increase in size of most bones during growth of the skeleton is by endochondral bone formation, for which purpose, until growth is completed, cartilage persists at epidiaphysial junctions. Thus growth of a long bone is accomplished by continuous proliferation of cartilage cells arranged in columns on the epiphysial side and concurrent degeneration of matured cartilage cells on the diaphysial side. The spaces which result from the degeneration and disappearance of the cartilage cells at the diaphysial ends of the columns are penetrated by capillaries accompanied with osteoblasts which are responsible for the deposition of bone matrix on the exposed cartilage matrix. Multiplication, increase in size, maturation and death of cartilage cells are therefore necessary sequences in normal skeletal growth. Preservation of conformation demands continuous remodeling involving resorption of bone where reduction of size is necessary and new deposition of bone from endosteal and periosteal sources to preserve continuity of structure. The deposition of bone by cells of endosteum and periosteum Wolbach refers to as appositional bone formation. In general, endochondral bone formation sets the pace and the pattern of skeletal growth. According to Wolbach, endochondral bone growth in vitamin A deficiency ceases before the growth rate of the animal as a whole is seriously affected. The result of the disproportionate growth of bone and central nervous system is overcrowding of spinal canal and cranial cavity and paralysis resulting from mechanical pressure on brain, spinal cord and nerve routes. Cessation of endochondral growth is not the sole effect of vitamin A deficiency on young bones; remodeling ceases and appositional bone formation continues at different rates in locations which vary with the species but which are in conformity with each normal growth pattern.

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[1] Mellanby, Edward: Vitamin A and Bone Growth: The Reversibility of Vitamin A Deficiency Changes, J. Physiol. **105**: 382 (Jan.) 1947.

[2] Wolbach, S. B.: Vitamin A Deficiency and Excess in Relation to Skeletal Growth, J. Bone & Joint Surg. **29**: 171 (Jan.) 1947.

Wolbach showed in his experiments that appositional bone formation continued and in certain locations became excessive after endochondral bone formation had ceased in vitamin A deficient animals. Apparently Mellanby and Wolbach agree as to the effect of vitamin A deficiency on bone growth in young animals; but while Mellanby explains this effect by the influence of vitamin A on the activity of osteoblasts and osteoclasts, Wolbach stresses that the effect of vitamin A deficiency is on the epiphysial cartilages and endochondral bone growth.

Current Comment

TOXIC ACTION OF EMETINE HYDROCHLORIDE ON THE HEART

Recently Dack and Moloshok[1] reported 9 cases of amebic dysentery in which toxic cardiac manifestations developed following treatment with emetine hydrochloride. The total doses of emetine varied from 7 to 22 grains (0.45 to 1.42 Gm.). The principal signs of toxic effects on the heart were dyspnea and tachycardia on mild exertion, fatigue and electrocardiographic changes generally involving the T waves. Because of the variation in the dosage of emetine hydrochloride which produced toxic cardiac effects, the investigators believe that there are individual differences in susceptibility to the drug or in the rate of its excretion. Signs of toxic effects were generally apparent in the neuromuscular and gastrointestinal systems before evidence of harm to the heart was manifest. These investigators believe that maintaining the patient at absolute bed rest throughout the course of treatment would decrease the frequency of toxic manifestations from emetine hydrochloride. The pulse rate should be recorded at frequent intervals daily, since tachycardia may be the first clinical sign of toxic effects on the heart. Daily examination and questioning of the patient would help to detect any possible evidence of toxicity, such as fatigue, diarrhea, dyspnea on exertion, muscular tremors or weakness and dizziness. They also advise that an electrocardiogram be taken before treatment is instituted and after administration of the fifth grain of emetine, and that the drug be promptly discontinued if significant changes are found. They believe that in the majority of cases of amebic dysentery the therapeutic effect is as good from the administration of 5 to 7 grains (0.32 to 0.45 Gm.) as with the higher doses sometimes employed. They also recommend that if evidence of amebiasis persists after the first course of treatment—and evidence of toxicity of emetine hydrochloride is not obtained—a rest period of at least a month should intervene before the resumption of treatment. Finally, they say that emetine hydrochloride should not be used in the presence of suspected organic heart disease and should be employed with great caution in patients who are anemic and debilitated.

EXCERPTA MEDICA AND OTHER ABSTRACT PUBLICATIONS

Excerpta Medica, a new publication with headquarters in Amsterdam, Holland, proposes to provide abstracts in English of every article appearing in every available medical journal in the world. These abstracts are to be issued in the form of fifteen separate sectional journals, each journal devoted to a definite field in clinical or theoretical medicine. This huge task will require some 3,000 specialists all over the world and 400 supervising editors. In each section either one or two volumes will be completed each year and on completion of each volume an index will be included. All published abstracts will bear the signatures of the specialists who prepared them. Abstracts will be numbered in the issues and, to facilitate ready and rapid reference, will be classified in the index both according to the author's name and according to the subject. The first issue offered is section XIII, devoted to dermatology and venereology. The British Medical Association is issuing monthly reports of abstracts in two forms, one dealing with internal medicine and one dealing with surgery, gynecology and obstetrics. It is also understood that Julius Springer Verlag, Berlin, is considering a revival of its zentralblätter and berichte.

PROGRESS IN INTERNATIONAL HEALTH ORGANIZATION

Real progress was made in international organization for health at the International Health Conference[1] held in New York June 19 through July 22, 1946. While all previous international health organizations have been purely informational and advisory in character, the new World Health Organization, under its constitution, will have the right to require certain annual reports from members, as well as to adopt conventions and regulations in specified fields such as sanitation, quarantine, disease, nomenclature, diagnostic standards, biologic products and pharmaceutic products. When the signatures of twenty-six member nations are affixed this constitution will come into force.

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[1] Dack, Simon, and Moloshok, Ralph E.: Cardiac Manifestations of Toxic Action of Emetine Hydrochloride in Amebic Dysentery, Arch. Int. Med. 79: 228 (Feb.) 1947.

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[1] Masters, Ruth D.: International Organization in the Field of Public Health, advance print of a chapter on public health in the forthcoming Manual of International Organization of the Division of International Law of the Carnegie Endowment for International Peace, Washington, 700 Jackson Place N.W., 1947.

ORGANIZATION SECTION

Medical Economics

MEDICINE AND ECONOMICS

ERNEST E. IRONS, M.D.
Chicago

Current views of the nature and content of what is called economics are as varied and often as bizarre as are some of the plans devised by idealists for the improvement of the human race and the establishment of Utopia. Some are based on misinformation or on partial information, others on prejudice with a minimum of knowledge.

Economics has been defined as a classless scientific study of the means by which people earn their living and of how they spend their income.

Up to a few years ago, few physicians knew or even thought much about questions of supply and demand, of competition, of financial systems, of theories of government. We along with most other citizens went about our businesses or professions, content to live under a democratic government. In spite of its easily recognized faults, it suited us and allowed us the personal freedom and opportunity which we enjoyed, but little appreciated, until we were threatened with their loss.

Now, after a period of war which required sacrifice of life and treasure, regimentation and suffering from the disruption of business and of living necessarily incident to total war, we have added difficulties of class demands and finally proposals that government take over the practice of medicine.

Shall we follow blindly the proposers of theories without consideration of whither they lead, or shall we look into history, where we may find the answers to the same problems in previous decades and centuries? Winston Churchill once remarked "The longer you can look back, the farther you can look forward. This is not a philosophical or political argument —any oculist will tell you this is true."

Much discussion of late has concerned what may be termed the internal economics of medicine: the prospective oversupply of specialists, which, it would seem, we may safely leave to the laws of supply and demand; the overcrowding of hospitals, and the denial of staff appointments to general practitioners in some places. These are faults which can be cured by a liberalization of hospital policies and the adoption of a less selfish attitude by certificants of special boards. The economics of medicine follow the same laws as do general economics, but with the most important modifying influence of the personal relation of physician to his patient.

Medical economics in the larger sense is closely integrated with the general economics of nations. In times of prosperity or of relative political quiet the proposers of revolutionary plans do not find popular support. Periods of stress, resulting from reduction of the opportunity of people to secure adequate food, clothing and other satisfactions of living, prepare the way for the acceptance by the people of theories and procedures of government which sometimes result in desirable reforms but more often bring ruin or delay the accomplishment of remedial measures because they violate economic laws.

The continuing realinements of civilization which we like to think of as advancing, the outcropping of national interests, and revolutions made possible and ultimately produced by the abuses of previous governments have brought into being other forms of government, which may be acceptable or possibly desirable in the countries of their origin but which are repugnant to our own. We here have no wish to dictate the form of government to be established elsewhere, but we do resent attempts from abroad and by malcontents at home to undermine our own democracy with the purpose later to substitute an unacceptable socialist régime. The present proposal to socialize medicine is one step toward this end, directed at medicine because it is vulnerable by reason of defects in distribution and because medical deficiencies are closely related to economic distress.

Some of the advocates of these social changes are sincere in their desire to help the underprivileged but lack the foresight or information, readily available from a study of the economics of history, to appreciate the ultimate results of their well intentioned efforts to aid the downtrodden. They become the ready tools of another group, who use these humanitarian impulses to further a deeper laid plan for the destruction of our form of government. The people are offered a program which promises to give them something they have not had before, whether it be Roman corn or paper money or medical service, and they seize on the new, not considering what they will lose or what the effect will be on their personal liberty or ultimately on their own government.

The unexpected results of new laws are often more significant than those anticipated by the framers of these laws. In our recent labor shortage many men preferred to receive their $20 dole than engage in urgent and legitimate work. In efforts to provide a buffer against adversity in the form of an unemployment dole, men have been encouraged to assume that the world owes them a living. A Negro maid in our community announced that she would take a vacation. Asked why, she said "I like my job, and I get good pay, but I figure that these times won't last and if I don't spend my money I'll have a bad time getting on relief."

We hear now no voices raised in favor of the destruction of food products, the slaughter of little pigs, the plowing under of food crops. Yet only a few years ago the advantages of an economy of scarcity were loudly proclaimed, to a large extent by the same group who would now regiment medicine by governmental edict.

Remarkable is the facility of such people to support unsound measures by fallacious and uneconomic arguments; then when the inexorable laws of supply and demand and the requirements of simple humanity demonstrate their failure quickly they shift to other and equally unsound ground, leaving the wreckage of their previous fiascos for others to clear away as best they can.

Under paternalistic laws more and more is done for people so that their individual responsibility grows less and less and they become finally mere pawns of the state. In order to make such a system operate, dictators are created. There is still retained a figment of representation, but the system operates by compulsion and personal responsibility is lost. Lord Elton, historian and fellow of Queen's College, Oxford, and himself a member of the British Labor Party, in speaking[1] of the relation of England to her colonies in 1770, well said "Later experience has repeatedly shown that representation without responsibility is the most dangerous of halfway houses to democracy."

COMMUNISM IN THE COLONY OF VIRGINIA

A communal system is no stranger in this country. It was tried and failed under John Smith in the colony of Virginia. Its operation is described in a report of Sir Thomas Dale, successor to Capt. John Smith, to the British Crown, quoted by Lord Elton.

"The early colonists had labored under two crippling disadvantages, communal ownership and its inevitable consequence, martial law. . . . The business of all proved to be the business of none." Men would not work for the common store as they would have worked for their own families, and Smith and his immediate successors had to drive their reluctant fellows with savage threats and punishments.

Condensed from an address delivered to the Columbia Medical Society, Columbia, S. C., April 14, 1947.

1. Lord Elton: Imperial Commonwealth, New York, Regnal and Hitchcock, 1946.

"The effects of a very partial introduction of private property under Sir Francis Dale were startling and immediate. Each man was given 3 acres of his own but still had to work eleven months out of twelve for the general store. Even so the lazy became industrious overnight.

"When our people were fed out of the common store and laboured jointly together, glad was he who could slip from his labour or slumber over his taske; he cared not how, nay, the most honest among them would hardly take so much true paines in a weeke, as now for themselves they will doe in a day; neither cared they for the increase, presuming, howsoever the harvest prospered, the general store must maintaine them, so that wee reaped not so much Corne from the labours of thirtie as now three or foure doe provide for themselves. . . .

"Gradually but only gradually the authorities in England came to realize that communal ownership and compulsion must go hand in hand. . . ."

EFFECT ON QUALITY OF SERVICE

That socialized medicine interferes with the physician-patient relationship is self evident by the recognition of advocates of socialized medicine of the necessity of providing a panel. The most shrewd advocates of socialized medicine have failed utterly in their contention that their plan will not interfere in this fundamental confidential relation of doctor to patient. It always has and always will. Indeed, this interference is part of their plan, although the more ardent advocates will not admit it.

The delegation of dictatorial power to one man, even though he may be advised by a council appointed by the same authority, is urged because, it is stated, there will be a tremendous amount of detail to be handled. This is true, and it will require also an enormous addition to our already swollen army of civil servants, much greater than was required for temporary wartime control of production and prices.

Physicians have up to now been individualists; they do their best work on a competitive basis. If the physician is alert, well trained, honest, proud of his profession and its achievements, he will strive continually to improve and give better service, and he is rewarded by the gratitude of his patients and in increase in his clientele and emoluments. To the degree that he is poorly prepared, slothful and loses his incentive to improve, he will do less creditable work. He will be limited by the deadly average of attainment, loss of initiative and dependence on a paternal government, which has always been the next step downward in socialistic governments of history. The removal of the individual incentive is fatal to progress, and human nature is the same, irrespective of occupation. Socialized medicine will reduce the quality of public service as it has in modern governments elsewhere.

Many social injustices and inequalities remain to be corrected. These become more evident as our general standard of living rises from decade to decade, but the remedying of these faults should not be made the occasion for destruction of past gains. In medicine, inadequacies in medical care are closely interlocked with general economic deficiencies. Understaffed and economically poor communities and areas require individualization of treatment, and a plan which will be efficient in one region may not work in another with a different local ideology and economy.

EFFECTS ON DEMOCRACY

While these effects on medical service to the people are serious enough, the less obvious and temporarily more remote effects of a program of socialized medicine on our government are a still greater threat to our national welfare.

A national plan by which government would take over the practice of medicine implies uniformity and loss of personal initiative. Uniformity, whether it concerns the administration of full medical care or of full employment, invokes the sovereign power of the state. Invoking these inherent powers of government to change this and that can lead only to the destruction of democracy and of personal liberty and free enterprise and to the institution of a dictatorship. This inevitable result has come to governments throughout all history from Greece, Rome, Florence down to postrevolutionary France and Nazi Germany. But it is argued that the present plans for government controlled medicine do not envisage any sweeping attack on democracy. At the same time it is averred that an extensive system of bureaucratic control will be necessary to make the program effective. The establishment of such uniform control would be a long step toward authoritarianism more certain in its effect than the legalization of the first issue of paper securities by the French Assembly in 1789.

UNIFORMITY—GOOD OR BAD

Uniformity of itself is not good nor is it bad, considered apart from its effects in the special field in which it is applied. There are many fields of community and national life in which uniformity of action is economically necessary, and these have resulted from science and invention; they are part of what we call the advance of civilization and permit the rise in standards of living. Mass production and the division of labor with the aid of machinery have made possible the enjoyment of comforts and shortened the hours of labor. Most householders do not maintain their own supplies of gas or electricity; if, however, such facilities are not available, they may still light their houses with kerosene lamps or candles. In recent years the gas cylinder and the local air or gas power plant have brought these conveniences to rural areas. The problems of supply of raw materials and of expense vary in different communities according to availability of fuel and the exigencies of climate, and so uniformity is limited by practical considerations. At the same time the householder is under no compulsion to employ them unless he so wishes.

In medicine, rules such as those for quarantine to prevent the spread of disease, for the handling and dispensing of food supplies, for dealing with epidemics have been found by experience necessary in order to do for the individual what he cannot do for himself, and for this purpose local, state and national health departments have been created. In all these, methods have been devised to deal with populations *en masse* for the prevention of disease, and uniformity of method is necessary for their accomplishment.

In education it is recognized that illiteracy is a threat to the life of the state. The welfare of the nation is best served by a system of public schools which can be maintained only by general taxation, under laws administered by the individual states of the Union. The problem of education is general; that of illness is individual. Some states are less able economically than others to maintain current standards and need help, but this need whether educational or medical must not be made the occasion for an invasion of the rights of states by federal bureaucracies.

Uniformity is thus good so long as it makes possible the attainment of desirable ends. Even here uniformity might be bad if it attempted to make all procedures for public utilities the same without regard to climate, natural resources or qualities of populations and also failed to consider that the economic requirements, financial status and abilities of a population today may be different tomorrow. From the beginnings of our government in the early colonies, diversity to meet local conditions and wishes of the citizens has been the rule, rather than uniformity. In the words of Woodrow Wilson, "There was no invariable pattern but everywhere on the contrary a spontaneous adjustment of political means to place and circumstance."

Uniformity provided by a national law for government practice of medicine would not correct the deficiencies in needy areas whose problems require varying treatment: at the same time it would impose an inferior quality of service on all.

MONOPOLIES

The institution of a government monopoly of medical care will produce the same results as have monopolies of the essentials of life in the past, whether it be the accumulation of grain by an Egyptian pharaoh or the acquirement of lands and vast sources of wealth by a Roman tyrant or the monopoly of business by Louis XIV. We have already seen in our own national life the ill effects of great business monopolies: the Sherman Antitrust Act was passed to prevent the stifling of competition. Monopoly of labor through unions originally designed to obtain justice and fair treatment for labor has now resulted in profit to a few of one class, to the detriment of a still larger class of labor, by denying them free opportunity to work. Monopolies whether of capital or of labor work to the benefit of their sponsors only so long as they are exceptional—when they become general they are destructive of the general welfare and ultimately destroy their creators. For this reason socialists and communists favor monopolies in business and in medicine as factors forwarding their own objectives.

Governmental monopoly of any product results in governmental dispensing of that product to its subjects. The recipients of government largesse look more and more to the government and, like the early colonists of Virginia, work less and less and invite the compulsion which precedes socialistic slavery and ultimate dictatorship.

The seriousness of some economic thinking in our own time was summarized in a recent political utterance ascribed to a counselor now dead and startling in its unashamed frankness: "We shall spend and spend, and tax and tax, and elect and elect."

Care of people by a paternalistic government results in loss of their sense of personal responsibility, first to participate in government, and later to make any effort to contribute to the general welfare.

In urging the theory of the right of a citizen to be cared for, social workers, betrayed by their own idealism, forget that this citizen has also an obligation in a democracy himself to contribute to the general welfare. Without insistence on this obligation, democracy fails.

We are just now emerging from a period of governmental regulation and centralization under bureaucracies made necessary by total war. This period, in which we have become somewhat inured to regimentation, is especially dangerous to our democracy. Socialist and totalitarian governments grow by steps, slowly at first, but with a steadily increasing tempo and always by deluding the people into the belief that the new will be better than what they already have. Government monopoly whether in business or in medicine inevitably leads to the abuse of power and deterioration of quality of service.

Governmental regimentation of medicine would give the American people an inferior rather than a better quality of medical service. What is even more vital, such regimentation would be another long step toward the destruction of free enterprise and of American democracy. As we love our country we shall exert our every effort as individually responsible citizens to maintain the freedoms which are characteristic of America, and the liberty that makes our country the land of the free, the home of free enterprise and of opportunity.

122 South Michigan Avenue.

Coming Medical Meetings

Alaska Territorial Medical Association, Fairbanks, July 28-30. Dr. William J. Blanton, Juneau, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 4-6. Dr. James R. Bloss, 418 Eleventh St., Huntington 1, W. Va., Secretary.

American College of Surgeons, New York, Waldorf-Astoria Hotel, Sept. 8-12. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2-6. Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr. Karl S. Richardson, 24 West Ohio St., Chicago, Business Manager.

National Medical Association, Los Angeles, Aug. 18-22. Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va., Secretary.

Nevada State Medical Association, Reno, Sept. 4-6. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.

Oregon State Medical Society, Portland, Sept. 4-6. Dr. Thomas S. Saunders, 1020 S. W. Taylor St., Portland 5, Secretary.

Southeastern Dermatological Association, Knoxville, Tenn., Hotel Andrew Johnson, Aug. 31. Dr. A. H. Lancaster, 608 W. Main Ave., Knoxville, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 11-13. Dr. Ray T. Woolsey, 610 McIntyre Bldg., Salt Lake City 1, Secretary.

Washington Letter

(From a Special Correspondent)

July 16, 1947.

Sanitation Survey by U. S. Public Health Service

The U. S. Public Health Service has reported that a minimum expenditure of $7,834,581,000 is required to improve American water supplies and waste disposal facilities to protect the public from filth borne diseases. Sanitary engineering division of the department bases the estimate on a national survey described as "the most complete inventory of basic sanitary needs ever compiled for the nation." This figure was described as the minimum required to reduce incidence or potential incidence of such diseases as dysentery, diarrhea and typhoid. Surg. Gen. Thomas Parran's comment is that "a sanitary environment for every one is a basic requirement of a national health program." The report stated that waterworks construction, sewage facilities, rural sanitation and garbage collection were required.

Latin American Pediatricians Attend Three Day Congress

A delegation of 414 Latin American pediatricians and several hundred American doctors attended the three day Pan American Congress of the American Academy of Pediatricians. The congress was organized to give Latin American pediatricians an opportunity to consult with the academy's United States membership. Three American doctors were made honorary members of the Latin American division of the American Academy: Joseph S. Wall, Washington, D. C., Henry F. Helmholtz, Mayo Clinic, and Clifford Grulee, Evanston, Ill. Drs. Grulee and Wall also received the Carlos Finlay award for promoting intercontinental advance of pediatrics.

Dr. Parran Prefers Murray Bill to Taft Health Measure

Surg. Gen. Thomas Parran of the U. S. Public Health Service said in a statement prepared for a Senate Public Welfare subcommittee meeting that the health service prefers the Murray Health Insurance bill to that submitted by Senator Taft. The Murray bill would set up a national system of compulsory health insurance to finance medical services for some 85 per cent of the population through a pay roll tax. The Taft bill asks Congress to provide 200 million dollars annually for each of five years to aid states in setting up medical care programs for low income families. Edward F. Poss, Toledo, speaking for the Fraternal Order of Eagles, testified that the Taft bill was "a forward stride in solving some of the health problems," whereas Dr. Allan M. Butler, professor of pediatrics, Harvard Medical School, advocated the Wagner-Dingell bill.

Committees Agree on Federal Cancer Research Fund

House and Senate conferees tentatively agreed on the 1½ billion dollar appropriation bill of the Labor Department's Federal Security Agency for 1948. The measure includes $14,000,000 in federal aid for cancer research and would also allot funds for research on streptomycin. The House had originally approved $17,328,000 for both programs, and the Senate reduced this to $12,000,000.

Doctors Can Go to Canal Zone to Study Malaria

Medical personnel of the District National Guard who want the training can take a twelve week course in malariology at Fort Clayton, Panama Canal Zone. Special courses in various phases of military medicine can be taken at the Army Medical Center in Washington and at army hospitals and medical centers at Denver, Atterbury, Ind., and Fort Sam Houston, Texas.

Health Precautions Planned for Bikini Resurvey

Capt. Christian L. Engleman, U. S. Navy, will serve as project officer under Capt. Thomas H. Hederman, U. S. Navy, who will command a scientific resurvey of Bikini atoll this summer to determine long range effects of atomic bomb tests made there last year. Captain Engleman will coordinate radiologic health and safety plans.

Bureau of Information

LOCATION OF PHYSICIANS

Virginia Shuler
Chicago

This is the fifth of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

"The distribution of physicians in New Jersey is quite satisfactory. There is no appreciable shortage of physicians in any rural county. There is little evidence of migration of physicians, at least from within the state. The difference in figures pertaining to physician population 1946 and 1947 does not represent migration but rather the return of physicians from military service, most of whom returned to their original location. There has been a moderate increase in physician population in our urban areas The physician population in rural counties is now at its prewar level, with no appreciable increase.

"New Jersey is a compact, industrial state We do have what we consider rural counties, but they are not the type of rural counties contained within many other states. Our farms are mostly of the small, family type farm, not the large farms common in Western states, and all are located within a reasonable distance of centers of population For these reasons the rural health problem is not a major problem in New Jersey

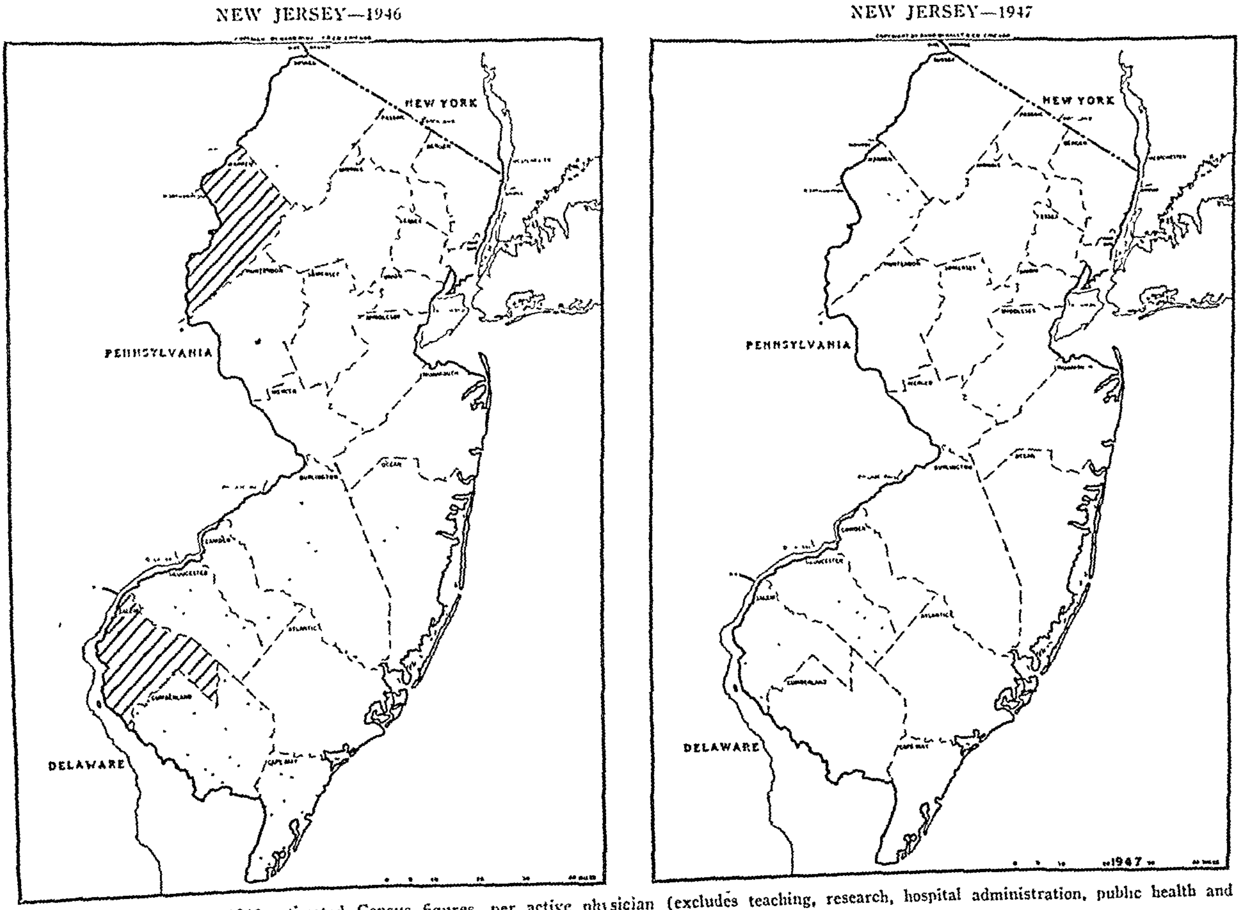
"Our chief hospital need is facilities for the care of the chronically ill. This need is in no way due to lack of appreciation of responsibility or obligation on the part of the profession but to the lack of appropriations to cover the cost of such institutions. We have one county, a rural county, Hunterdon, without a voluntary general hospital. For several years there has been a trust fund available in this county for the construction of a hospital, but at present the population of the county does not feel that a hospital is necessary. They are accommodated in the hospitals of surrounding counties, namely Warren, Somerset and Mercer. There is one point in the county which is 20 miles from a general hospital, the greatest distance of any point in the state from a general hospital.

"A plan for state financial aid to our municipalities is available through New Jersey Municipal Aid Administration to all municipalities in the state for medical care of the indigent. Participating municipalities under this plan at present represent 90 per cent of the state's population. The only large municipality not accepting state aid but handling the problem entirely at its own expense is the city of Hoboken.

"In addition, at a state level, are the following agencies providing categorical assistance including medical care: the New Jersey Commission for the Blind, the New Jersey Crippled Children's Commission, the New Jersey State Board of Children's Guardians, the New Jersey Rehabilitation Commission, New Jersey Old Age Assistance Commission and New Jersey Workmen's Compensation Commission. Through the state department of health are operated Baby Keep Well Stations and Venereal Clinics in each large municipality.

"Over 900,000 persons are enrolled in Hospital Service Plan of New Jersey, the New Jersey Blue Cross Plan, serving employed groups in every county throughout the state, with the cooperation of two hundred hospitals under contract with the plan as cooperating hospitals. Over 90,000 persons are enrolled in Medical-Surgical Plan of New Jersey, the nonprofit prepayment plan organized by the Medical Society of New Jersey, serving employed groups throughout the state with the cooperation of over 3,400 participating physicians"

Norman M. Scott, M D., Executive Assistant,
Medical Society of New Jersey,
31 Clinton Street, Newark 2, N. J.



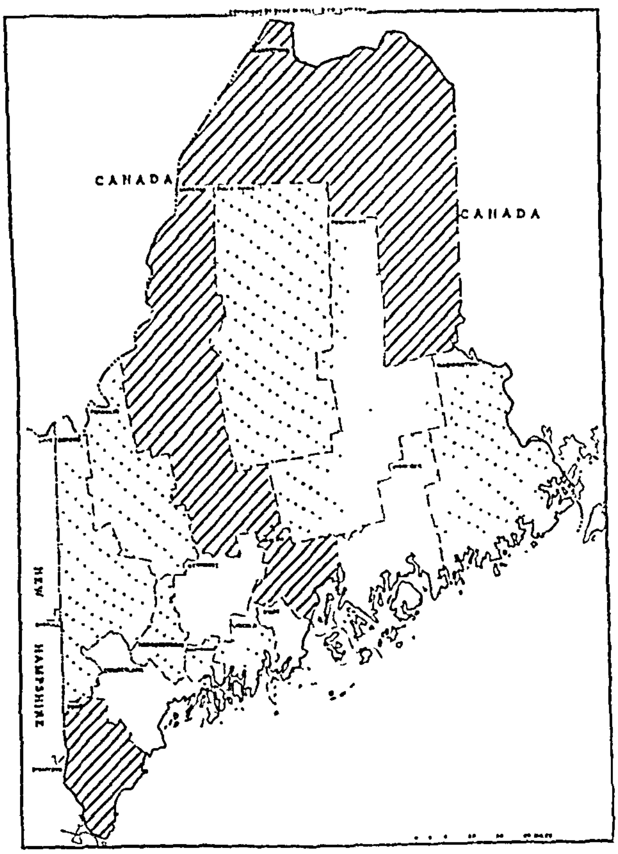
NEW JERSEY—1946

NEW JERSEY—1947

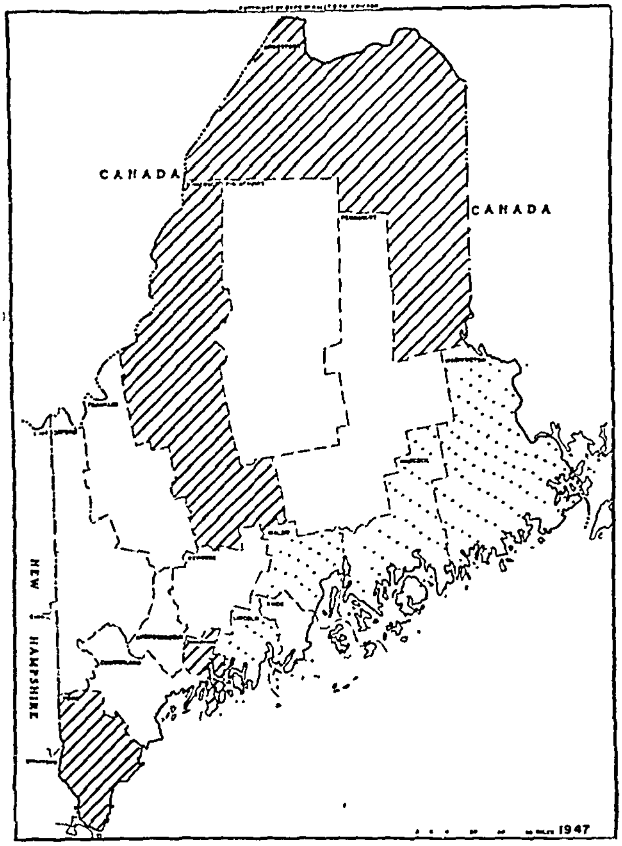
[illegible] based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and stat[illegible] ratio by county: plain area 1-999, dotted area *1,000-1,499, striped* area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

No areas in New Jersey requesting general practitioners.

MAINE—1946



MAINE—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

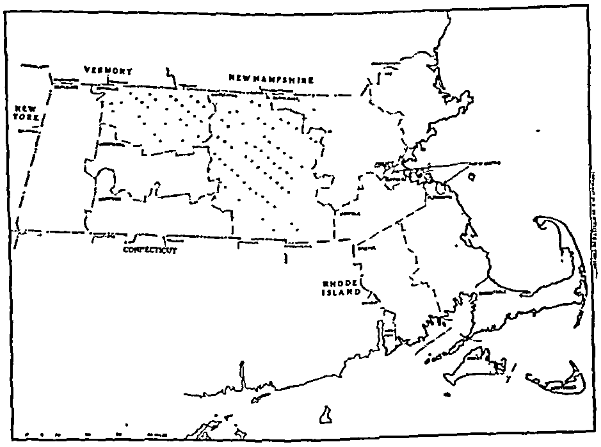
Key: Physician population ratio by county plain area 1-999, dotted area 1,000-1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor.

Area in Maine Requesting General Practitioner

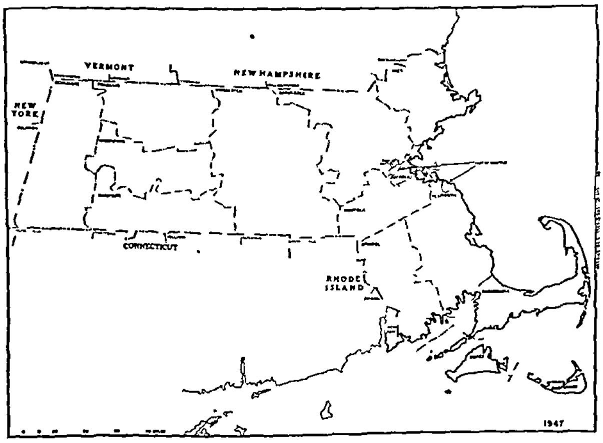
County	Town	Population
York...........................	Cornish.........	528

Mr. W. Mayo Payson, Executive Secretary,
Maine Medical Association,
142 High Street, Portland 3, Maine.

MASSACHUSETTS—1946



MASSACHUSETTS—1947



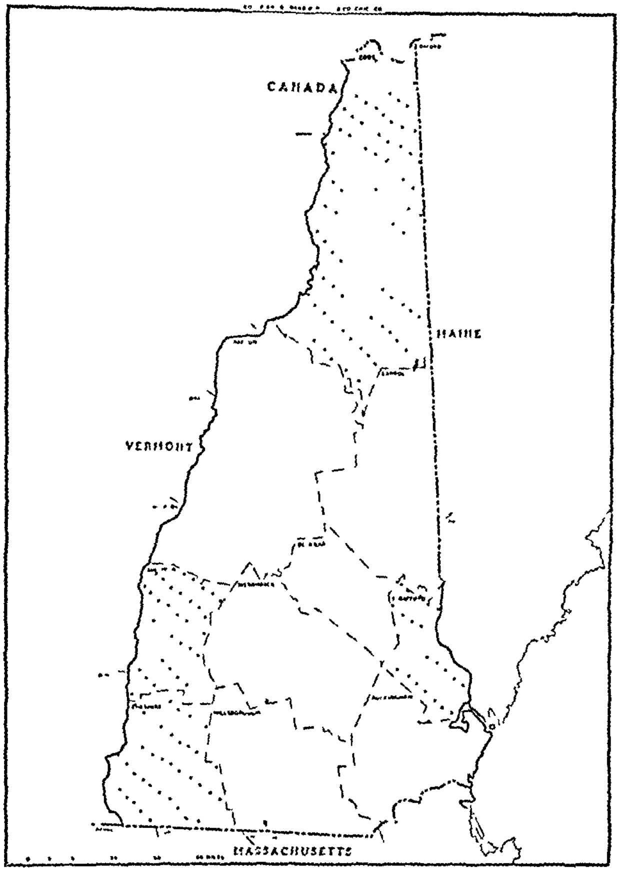
Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician population ratio by county. plain area 1-999, dotted area 1,000-1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor.

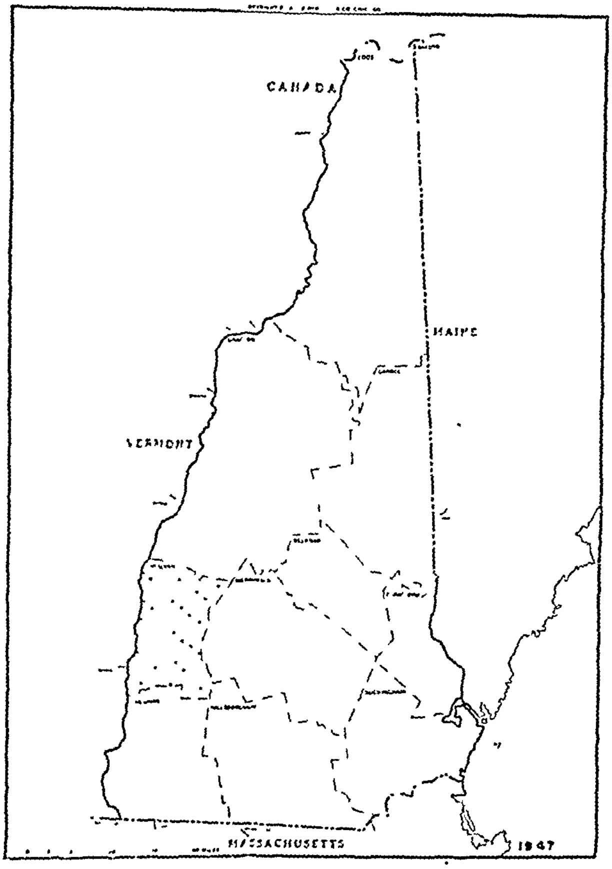
No areas in Massachusetts requesting general practitioners.

Joseph Garland, M.D., Secretary,
Massachusetts Medical Society,
8 Fenway, Boston 15.

NEW HAMPSHIRE—1946



NEW HAMPSHIRE—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county

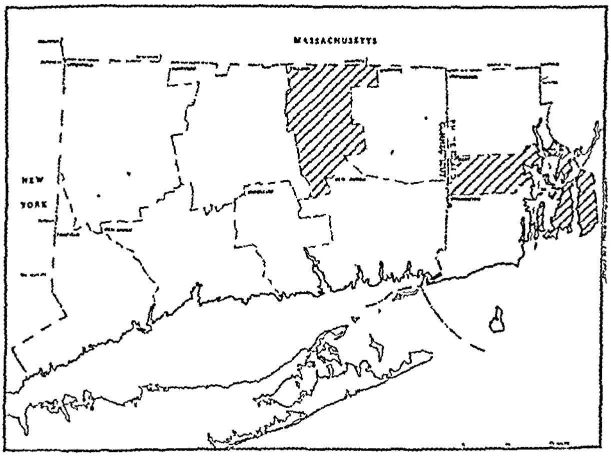
Key Physician population ratio by county plain area 1 999, dotted area 1,000 1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor

Areas in New Hampshire Requesting General Practitioners

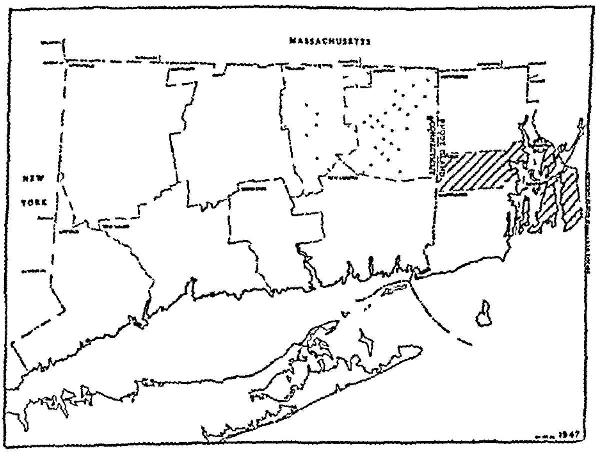
County	Town	Population
Cheshire	Marlboro	1,835
Crafton	Lisbon	1,197
Rockingham		58,142
Strafford	Durham	928
Sullivan	Plainfield	125
	South Acworth	150

C. R Metcalf, M.D, Secretary,
New Hampshire Medical Society,
5 South State Street, Concord, N. H.

CONNECTICUT—1946
RHODE ISLAND—1946



CONNECTICUT—1947
RHODE ISLAND—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county

Key Physician population ratio by county plain area 1-999, dotted area 1,000 1,499, striped area 1,500 2,999, checked area 3,000 and over, solid [illegible] area no doctor

No Areas in Connecticut requesting general practitioners.

"This state has more physicians than before the war and a slightly increased estimated population. There was a large in-migration of physicians in the months just after military demobilization, and this continues in a lessened degree. The greater proportion of these in-migrants were veterans who had practiced in the metropolitan New York area before the war. A few physicians can still be located in this state but only in carefully selected areas. There are many openings in full time public employment, no part time. Specialists in pediatrics, obstetrics, ophthalmology and otolaryngology, American board diplomates or equivalent, can be considered and some rural openings are apparent."

CREIGHTON BARKER, M.D., Secretary,
The Connecticut State Medical Society,
258 Church Street, New Haven 10, Conn.

No areas in Rhode Island requesting general practitioners.

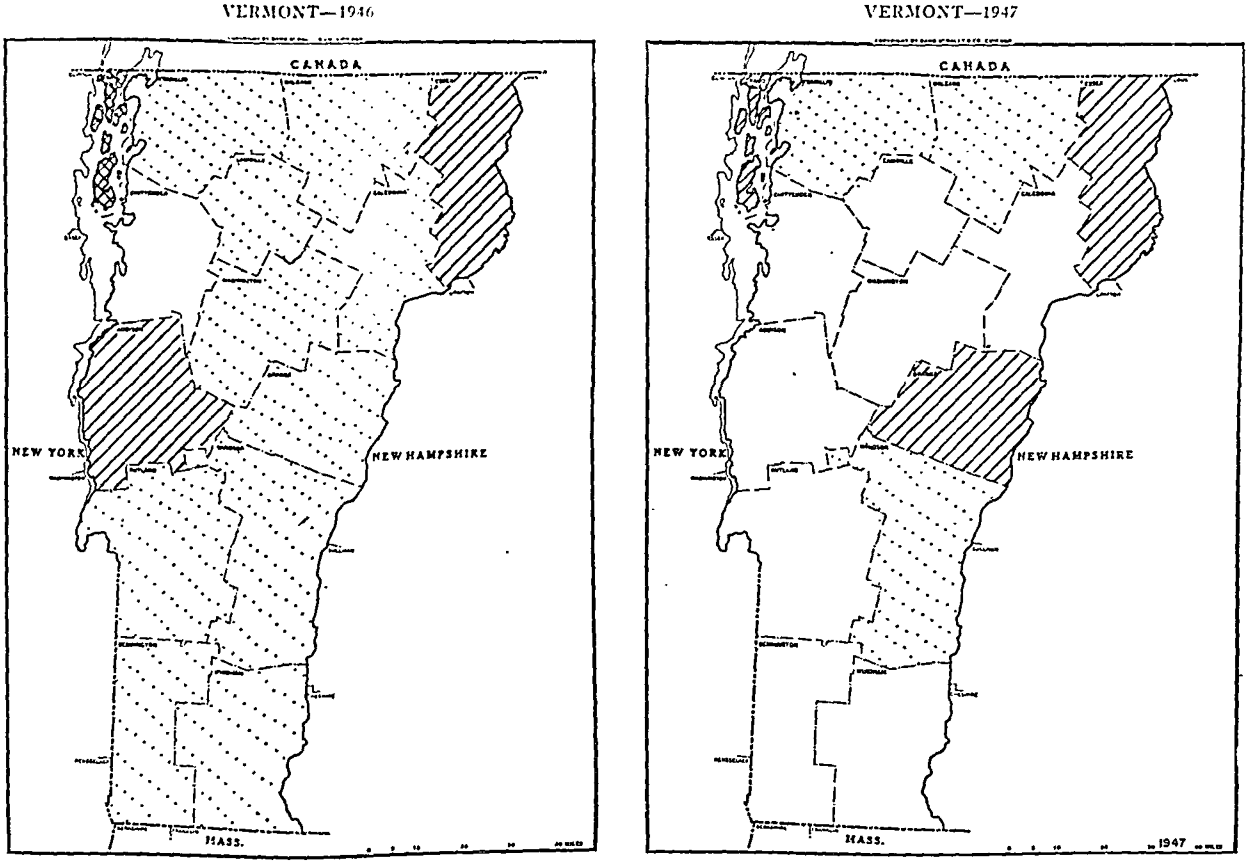
"Because of its geography, Rhode Island is ideally equipped to provide adequate medical care and facilities conveniently to all its residents. No resident is beyond 15 miles from a hospital, and with paved roads crisscrossing the area, transportation is swift and convenient.

"The physician population, as in every state, centers about the large cities. As Rhode Island is better than 92 per cent urban, the situation is ideal. There is no appreciable rural health problem, as physicians can easily move into the limited rural districts from the urban centers or have patients brought to the cities.

"There has been little migration of the physician population due to the war. A few physicians have settled in other states, but their loss has been more than compensated by the arrival here of many young men returned from the armed forces plus several men moving to Rhode Island from other states.

"Successful financial programs have been completed for additional hospital facilities which include the construction of a five million dollar new Rhode Island Hospital. Plans are under way for another new hospital in the state in Kent County, and the Veterans Administration is now erecting a 400 bed hospital close to the center of Providence."

MR. JOHN E. FARRELL, Executive Secretary,
Rhode Island Medical Society,
106 Francis Street, Providence 3, R. I.


VERMONT—1946

VERMONT—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Vermont Requesting General Practitioners

County	Town	Population
Franklin		29,601
Orange		17,048
Windsor		37,862

"While Vermont, with 398 active physicians to 359,231 population, has a ratio statewide of 1 physician to every 903 people, there is not an even uniformity of this ratio throughout the state, the more rural areas having a somewhat lower ratio of physicians to population. There has been relatively little migration of physicians in Vermont within the past year, but there has been an increase of active practitioners by 39, generally speaking graduates of the University of Vermont College of Medicine who had practiced a year or two in local communities before the war and who have returned to those places.

"We believe that probably the primary reason for our being able to maintain as satisfactory distribution of physicians as we have is the tendency for young men and women here in Vermont to attend the College of Medicine at the University of Vermont and return to their home communities to practice. The secondary reason would be the availability of hospital facilities in most areas. As a partial solution to the economic side of the problem of practice in rural areas, we are hopeful for results from the New Hampshire-Vermont Physician Service, sponsored by the Vermont State Medical Society, which is conducting enrolment campaigns on a community basis, which in our state means that the rural population will have an opportunity to participate."

Mr. John W. Brownlee, Executive Secretary,
Vermont State Medical Society,
128 Merchants Row, Rutland, Vt.

Official Notes

MUTUAL NETWORK BROADCASTS WILL NOT CLOSE

The summer season brings the cessation of broadcasts on the network of the National Broadcasting Company, but the Mutual Broadcasting System program will continue until November 17.

"Doctors—Then and Now," broadcast in cooperation with the National Broadcasting Company, was exceptionally well received by state medical societies, local radio stations and lay listeners and received a first award[1] in its class from the Institute for Education by Radio held at Ohio State University, Columbus, May 2-5. This program was based on regional broadcasts with participation of local medical societies and the origination of speakers at local radio stations in twenty-five areas of the continental United States. It dealt with medicine in the early years of the American Medical Association's hundred year history as compared with medicine today. Twenty-five physicians selected by state medical societies participated in the program.

The Mutual program "Stephen Graham—Family Doctor" is intended to portray to the lay listener some of the difficulties, problems, perplexities and heartbreaks of the physician, as well as his ethical and professional attitude toward patient, community, fellow practitioner and his profession. It is relatively light in educational medical features, since its purpose is to interpret the doctor rather than to educate the public in medical facts. This program too has received wide acceptance from radio stations, physicians and the public.

Extensive network broadcasting is costly. Although time is generously donated by the networks, the program costs must be assumed by the Association, and these are considerable. The Board of Trustees has authorized arrangements to be made for suitable sponsors who will join the Association in rendering public service through radio. This policy became effective in May, and thus far no programs have been sponsored commercially.

The American Medical Association wishes to express to the National Broadcasting Company and the Mutual network its appreciation for cooperation in the broadcasting of these two successful public service programs. To the Columbia Broadcasting System and the American Broadcasting Company, as well as National and Mutual, the Association extends its appreciation for liberal and friendly cooperation in broadcasting important features of the recent centennial meeting at Atlantic City.

Medical Legislation

STATE LEGISLATION

Alabama

Bill Passed.—S. 112, which passed the senate June 25, proposes the enactment of a law to regulate the handling, sale and distribution of **barbiturates.** The proposal would require prescriptions for barbiturates to be made only by a pharmacist on the original prescription of a person licensed to prescribe and administer barbiturates.

California

Bills Passed.—A. 1833, which passed the assembly June 12, to amend the labor code, proposes to define the word physician so as to include **optometrists** when relating to medical services rendered under the workmen's compensation act. A. 2352, which passed the assembly June 3, to amend the health and safety code, proposes to authorize a **cemetery authority** or a licensed funeral director to permit an autopsy of any remains in its custody on the receipt of a written authorization of a person representing himself to be the surviving spouse, a surviving child or parent, a surviving brother or sister, any other kin or person who has acquired the right to control the disposition of the remains, or the coroner or other duly authorized public officer. The proposal would also provide that the cemetery authority or licensed funeral director is not liable for permitting or assisting in making an autopsy pursuant to such authorization unless it has actual notice that the representation therein is untrue. S. 1259, which passed the house June 16, proposes the enactment of a chapter of the health and safety code for the purpose of licensing, inspecting and **regulating public and private establishments** which render to handicapped persons medical advice, diagnosis or treatment, physiotherapy, any form of muscle training, massage, etc.

Bills Enacted.—A. 2428, which has become chapter 867 of the Laws of 1947, to amend the business and professions code, authorizes licentiates of other states to act as resident or assistant resident physicians and **surgeons in state hospitals** for a period of not exceeding one year under certain circumstances. S. 808, which has become chapter 705 of the Laws of 1947, to amend the health and safety code, requires every licensed physician and surgeon or other person engaged in prenatal care of a **pregnant woman,** or attending such woman at the time of delivery, to obtain a blood specimen of such woman at the time of the first professional visit or within ten days thereafter and to submit such sample to an approved laboratory for a laboratory test for syphilis.

Nebraska

Bill Enacted.—L. B. 250, which was approved June 9, 1947, provides for the licensing, inspecting and regulating of hospitals and related institutions within the state and provides for the creation of a **hospital licensing council.**

New Hampshire

Bills Passed.—H. 370, which passed the senate June 18, proposes the enactment of a hospital survey and construction act requiring a **survey of hospital facilities** within the state and the preparation of a program for the construction of additional needed facilities. The proposal also requires the appointment of an advisory hospital council and authorizes the state board of health to apply for and accept federal funds for assisting the state in its hospital program. H. 371, which passed the senate June 18, proposes the enactment of a **hospital licensing law.** H. 448, which passed the senate June 12, proposes to require every physician attending a pregnant woman for conditions relating to the pregnancy to take or cause to be taken a sample of blood of such woman at the time of the first examination and to submit such sample to an approved laboratory for a standard **serologic test for syphilis.** H. 456, which passed the house June 23, proposes the creation of a **mental hygiene commission** to manage and conduct mental hygiene clinics primarily for the psychiatric and psychologic study and treatment of such children as may be committed to its care.

Wisconsin

Bill Introduced.—S. 19, to amend the law relating to **the mentally infirm** and mentally deficient persons, epileptics, inebriates and drug addicts, proposes that the term "examining physician" as used in the act should mean one who is entitled to use the designation M.D.

Bill Passed.—S. 509, which passed the house June 12, proposes to authorize cooperative associations to establish and operate **nonprofit plans for sickness care,** including hospital care, for members through contracts with physicians, medical societies, hospitals and others.

Bills Enacted.—S. 105, which has become chapter 255 of the Laws of 1947, is a hospital survey and construction act requiring a survey **of hospital and health facilities** in the state and the preparation of a program for the construction of additional needed facilities. The law requires the appointment of an advisory hospital council and authorizes the state board of health to apply for and receive federal funds to assist in such survey and construction program. S. 156, which has become chapter 209 of the Laws of 1947, relating to the **licensing of osteopaths,** requires applicants for a license to practice osteopathy to have completed at least twelve months' internship in a reputable osteopathic hospital or its equivalent. S. 446, which has become chapter 269 of the Laws of 1947, requires all physicians and hospital authorities **to report deaths, homicides, suicides,** etc. to the sheriff, police officer or coroner of the county where such death takes place.

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[1] Official List of Awards and Judges' Report for the Eleventh American Exhibition of Educational Radio Programs, May 2-7, 1947, sponsored by the Seventeenth Institute for Education by Radio, Ohio State University, Columbus 10.

GOVERNMENT SERVICES

ARMY

ARMY TO BUILD RESEARCH CENTER

What is planned to be a great research center will be built for the Army Medical Department at Forest Glen, Md., near Washington, D. C., the War Department announced June 22. The initial cost is estimated at about $40,000,000. The Army District Engineer will supervise construction. The project will consist of a 1,000 bed general hospital, the Army Institute of Pathology, the Army Medical Museum and Center Administration building. Central Laboratory Group buildings and the Army Institute of Medicine and Surgery. A working library, quarters for the staff and an animal farm are included in the plans.

The new center will have close relationship to the Walter Reed Medical Center, the Naval Hospital, the medical schools of the District of Columbia and the proposed new District Medical Center, and it will cooperate with the Bureau of Standards, the National Institute of Health and the National Research Council.

Plans for the hospital building provide that 200 beds shall be specifically designated for research activities of the various institutes and central laboratories. However, they will remain an integral part of the hospital for service and patient care. The plans call also for a gymnasium, bowling alleys, swimming pool, auditorium, post exchange, post office, bank and game rooms, included in, or directly connected with, the hospital building.

The Institute of Pathology building will house the Department of Pathology, the American Registry of Pathology and the Army Medical Illustration Service Extensive facilities for experimental research and teaching in pathology will be provided. The building will be connected with the Army Medical Museum and with the Central Laboratory Group. All research activities of the various groups will be correlated and the expanded Central Laboratory Group will serve research and teaching activities of all institutes.

The Administration Building will provide facilities for the administration of the entire center and will house the Army Medical Museum, the main auditorium, the research library and certain graduate teaching facilities.

The Central Laboratory Group will provide research and graduate teaching facilities for the entire center. These will be constructed as the need for them grows, the first being devoted to the service of the Institute of Pathology

The Institute of Medicine and Surgery building will house the departments of Research Medicine, Research Dentistry, Veterinary Medicine, Research Surgery, X-Ray and Radiation and Preventive Medicine.

The center will bring together various medical units now scattered in various parts of the United States.

The architect-engineer contract for the proposed "Army Medical Research and Graduate Training Center" has been awarded jointly to New York and Washington firms as joint venturers.

NURSES NOMINATED FOR REGULAR ARMY COMMISSIONS

The President has sent to the Senate for confirmation the names of seventy-three nurses who have been nominated for permanent commissions in the Regular Army nurse corps. This is the first increment selected for commissions under the new law approved April 16. The nurses nominated have been serving on active duty in the Army, many of them for many years. The new appointment clarifies their status in the Regular Army. The ranks recommended for these nurses vary from the rank of Colonel to that of First Lieutenant, and included in the list is Col. Florence A. Blanchfield, who during the war was chief of the nursing division in the Surgeon General's Office and who is nominated for a permanent rank of Lieutenant Colonel.

ARMY AWARDS AND COMMENDATIONS

Brigadier General Elliott C. Cutler

The Oak Leaf Cluster to the Distinguished Service Medal has been awarded to Brig. Gen. Elliott C. Cutler, M. C., A. U. S., of Boston, for exceptionally meritorious service to his government in a duty of great responsibility from October 1942 to May 1945. The citation explains that, as chief surgical consultant, Headquarters European Theater of Operations, he was responsible for the development of adequate care of all wounded and injured in the theater, and to meet this great responsibility General Cutler developed and promulgated policies, instituted training programs, developed channels of free interchange of medical and surgical knowledge between medical officers of all Allied nations and by constant inspection of all echelons assured the highest standard of surgical care. General Cutler was a source of inspiration to the hundreds of surgeons at whose hands the American soldier received the finest care the world has ever seen. Dr. Cutler graduated from Harvard Medical School in 1913 and entered the service in World War II in July 1942.

Colonel Joseph F. Sadusk Jr.

The Typhus Commission Medal has been awarded to Col. Joseph F. Sadusk Jr., M. C., A. U. S., of New Haven, Conn. Colonel Sadusk rendered exceptionally meritorious service in connection with the United States of America Typhus Commission as executive officer of the special commission sent to the Southwest Pacific in September 1943, which commission conducted original investigations in New Guinea from October through December 1943. Colonel Sadusk had responsibility for most of the administrative matters of a scientific expedition working under campaign conditions in the Dobodura area at a time when scrub typhus was a disease of paramount military importance. He also made original and valuable contributions to the knowledge of the sources and mode of spread of scrub typhus, to the clinical characterization of the disease and to methods of treatment. His many sided contributions to the work of this commission assured its success and added new knowledge on the control and treatment of scrub typhus. Dr. Sadusk graduated from John Hopkins University School of Medicine in 1935 and entered military service in March 1942.

Colonel Hubert T. Marshall

The Legion of Merit has been awarded to Col. Hubert T. Marshall, M. C., A. U. S., who served in various capacities in the procurement of medical supplies and later as commanding officer, Army Medical Purchasing Office, from September 1943 to September 1945. He is recognized in the citation as having made a significant contribution to the successful accomplishment of the Medical Department's mission in World War II. During the period of Colonel Marshall's responsibility for procurement, many important items, such as penicillin and Japanese B encephalitis vaccine, were produced by industry for the first time. He played a significant role in the securing of an even flow of medical supplies without which the high standards obtained in the maintenance of the health of the Army and the care of casualties would not have been possible. He dealt with the many intricate problems of medical supply with courage, outstanding professional skill and a loyal devotion to duty. Dr. Marshall graduated from the University of Louisville School of Medicine in 1932 and entered the military service in December 1934.

Lieutenant Colonel Robert P. Rogers

The United States of America Typhus Commission Medal has been awarded to Lieut. Col. Robert P. Rogers, M. C., A. U. S., of Greenwich, Conn., whose citation mentions the meritorious service which he rendered in connection with the work of the United States of America Typhus Commission during the epidemic at Naples and in southern Italy in the winter of 1943-1944. At that time he was on duty with the Allied Control Council. When his services were made available to the commission, he was placed in charge of the immunization section for the administration of typhus vaccine for the protection of individuals against infection. Through his efficient handling of this section, Lieutenant Colonel Rogers contributed to the success of the typhus control program in southern Italy. Dr. Rogers graduated from Harvard Medical School in 1925 and entered the military service in August 1942.

Major Richard P. Custer

The Army Commendation Ribbon has been awarded to Major Richard P. Custer, M. C., A. U. S., of Philadelphia. The citation read as follows: While on duty at the Army Institute of Pathology from Nov. 27, 1942 to Jan. 23, 1946 his outstanding professional skill and devotion to duty contributed in large measure to the professional success of the Army Institute of Pathology, especially as it is concerned with diseases of the blood-forming tissues and the lymphatic tumors. His studies and research have contributed to our knowledge of these diseases, which proved so important in the military service. Dr. Custer graduated from the Jefferson Medical College of Philadelphia in 1928 and entered the military service in November 1942.

Captain David Hochman

The Bronze Star Medal has been awarded to Capt. David Hochman, M. C., A. U. S., of Brooklyn, who as an assistant to the chief of professional services and surgery at the prisoner of war camps in Osaka, Japan, devoted untiring effort to improving the welfare of fellow captives from April 1944 to July 1945. The citation states that despite his own illnesses he performed services which did much to maintain the health and morale of his comrades. Dr. Hochman graduated from the School of Medicine, Royal Colleges of Edinburgh, Scotland, in 1939 and entered the military service in July 1941.

PUBLIC HEALTH SERVICE

THE ENLARGED CANCER CONTROL PROGRAM

With the passage of legislation bringing next year's budget of the National Cancer Institute, Bethesda, Md., to the all time high of $14,000,000, the U. S. Public Health Service announces plans for an expanded attack on the cancer problem.

Under authority of the Public Health Service law and the appropriation act, support may now be extended to universities to assist in developing greatly expanded cancer research and training programs. The law also supports the acquisition of land and construction of buildings when urgently needed. Under a provision of the act, funds for cancer research and training grants remain available until spent.

Four million dollars of the increase in the budget will go to cancer control, the program administered through the states to increase the effective use of present methods of diagnosing and treating cancer. The cancer control program will place emphasis on the improvement of cancer detection, diagnostic and treatment facilities, the development of refresher courses for doctors, the establishment of adequate statistical services on cancer and the setting up of a cancer control units in state health departments.

In connection with the expanded program Dr. Harry Eagle has been appointed director in charge of research within the institute and Dr. David E. Price in charge of cancer research grants. Dr. Austin V. Deibert also joins the program in charge of cancer control. Dr. Eagle comes to the institute from Baltimore, where he was director of the Laboratory of Experimental Therapeutics, a joint project of the U. S. Public Health Service and the Johns Hopkins School of Hygiene. He has made important research contributions in immunity and serologic tests for syphilis. Dr. Price was formerly in the Research Grants Division of the National Institute of Health, and Dr. Deibert was in charge of cancer control before its recent transfer to the Cancer Institute from the Bureau of States Services of the U. S. Public Health Service.

OFFICERS RELEASED FROM SERVICE

U. S. Public Health Service headquarters reports that the following medical officers have been terminated, inactivated or retired and directed to proceed to the city opposite their names:

Boyd, Dewitte T., S. A. Surgeon (R), Hermiston, Ore.
Card, William J., S. A. Surgeon (R), Chattanooga, Tenn.
Holloman, Alfred L., Surgeon, Frederick, Okla.
Jenkins, Edward C., Surgeon, Pinehurst, N. C.
Koplin, Allen N., S. A. Surgeon (R), New York.
Reiter, Adolph F., Surgeon (R), McKeesport, Pa.
Stanulonis, Stanley W., Surgeon (R), Shenandoah, Pa.

CLOSE MARINE HOSPITAL

According to an announcement by the Surgeon General May 20, the U. S. Public Health Service decided to close the 90 year old Marine Hospital at Evansville, Ind., June 30. The decision was based on the findings of a special board that the hospital had operated at only 50 per cent capacity for the last two years, that patient costs are excessive and that the two wings are fire hazards.

MISCELLANEOUS

VOCATIONAL REHABILITATION PROGRAM

More than 160,000 disabled civilians have been prepared for and placed in paying jobs since the civilian vocational rehabilitation program was expanded four years ago, director Michael J. Shortley announced on the fourth anniversary of the legislation which led to the establishment of the Office of Vocation Rehabilitation. The vocational rehabilitation program through which these civilians became wage earners and tax payers was maintained at an average cost of about $300 per rehabilitated case. The total annual earnings of the disabled men and women who were rehabilitated in the 1946 fiscal year were estimated at about $11,600,000 when they contacted the state agencies; after rehabilitation the rate of annual earnings of these workers —excluding family workers and farmers—was an estimated $56,300,000, or an increase of almost 400 per cent. Public Law 113 amended the original law so that mentally handicapped civilians became eligible for state-federal vocational rehabilitation services, as well as the physically disabled. It also provided authority for the use of medical, surgical and psychiatric treatment to reduce or remove job handicaps resulting from physical or mental disability—a provision which was lacking in the original law.

SALE OF SURPLUS GOVERNMENT PROPERTY

About $1,500,000 worth of pentothal sodium is being offered for sale by the War Assets Administration at new low fixed prices up to July 28. The pentothal sodium is in 0.5 and 1 gram ampules, packed in boxes of twenty-five ampules of the anesthetic and twenty-five ampules of sterile distilled water. Each case contains twelve boxes, and the price f. o. b. is $50 per case for the 0.5 Gm. ampules and $80 for 1 Gm. ampules.

Regional Office, 404 South Wabash Avenue, Chicago 5. Sale of hypodermic needles. Sale opens July 21 and is continuous.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Dumas, James F.	Foley
Gay, Otis F.	Greenville

Arizona

Johnston, Charles L. Jr.	San Luis

Arkansas

Clark, James F.	No. Little Rock
Gordy, Luther F. Jr.	Conway
Mayfield, George C.	Hot Springs
Toombs, Vernon L.	Gurdon

California

Crall, Herbert D.	San Francisco
Davis, David S.	Los Angeles
Davis, Irving	San Francisco
Dawson, George I.	Napa
Fisher, Harold L.	Santa Cruz
Gladen, Ralph G.	Patton
Hutner, Laurence M.	Beverly Hills
Kieffner, Richard G.	Los Angeles
Koerper, Carl W.	Oakland
Mikita, Michael M.	Oakland
Nowack, Jacques	San Francisco
Ostich, Nathan H.	Los Angeles
Paisley, Charles B.	Inglewood
Rabinowitz, David L.	Los Angeles
Rickard, Vernon	Los Angeles
Roberts, Nathaniel E.	Los Angeles
Walters, Harold E.	San Jose
Wolohan, Jeremiah J.	Berkeley

Colorado

Keefe, John A.	Denver
Roadruck, Roscoe D.	Salida
Shea, John D.	Denver

Connecticut

Griswold, Dwight	Old Lyme
Ingenito, Gabriel A.	New Haven

District of Columbia

Brandes, Herbert G.	Washington
DeSaussure, Richard L. Jr.	Washington
Gray, Augustus C.	Washington
Rogers, John S.	Washington

Florida

Elmendorf, John E. Jr.	Jacksonville
Waldred, Jack M.	Leesburg

Georgia

Coward, Allen W.	Augusta
Hummel, John E.	Augusta
Mashburn, Marcus Jr.	Cumming
Rabun, John B.	Augusta
Ward, William C.	Atlanta

Idaho

Rigby, Elmer C.	Idaho Falls

Illinois

Barnes, Kenneth O.	Chicago
Crandle, Ellis R.	Carbondale
Davis, Dave	Chicago
Eisele, Paul L.	Naperville
Faingold, Joseph E.	Chicago
Grams, Leslie R.	Chicago
Harroun, John E.	Chicago
Kocour, Elmer J.	Chicago
Massover, Alfred J.	Chicago
Metro, Michael L.	Alton
Michet, Clement J. J.	Chicago
Sarver, Francis E.	Chicago
Schroeder, Paul L.	Oak Park
Seaman, William B.	Chicago
Siler, George B.	Oak Park
Voltz, Vernon C.	Rockwood
Watson, James	Chicago
Weigel, William J.	River Forest

Indiana

Beeler, John W.	Indianapolis
Bloomer, Richard S.	Rockville
Eades, Ralph C.	Valpariaso
Ference, Edward G.	Whiting
Graves, John W.	Indianapolis
Klaus, Julius M.	Gary
Marshall, William P.	Indianapolis
Nowak, Henry J.	Indianapolis
Owsley, Guy A.	Hartford City
Schlaegel, Theodore F. Jr.	Indianapolis
Schmidt, Robert L.	Evansville
Seal, Perry F.	Indianapolis
Sheridan, Joseph L.	Kokomo
Steele, Paul W.	Indianapolis
Toth, John J.	Whiting

Iowa

Berryhill, Melvin B.	Buffalo Center
Bruner, Julian M.	Des Moines
Glesne, Orvin G.	Knoxville
Kersten, Herbert H.	Fort Dodge
Kienzle, William K.	Gladbrook
Midkiff, Carl M.	Iowa City
Stamler, Frederic W.	Muscatine
Walvoord, Carl A.	Dunlap
Waterman, Franklin M.	Ruthven
Wolfe, Otis D.	Marshalltown

Kansas

Anderson, Arthur S.	Lawrence
Blackburn, Lewis C.	Eudora
Gibbons, Edward H.	Topeka

Kentucky

Myers, Ernest E.	Lexington
Rutledge, Charles C.	Richmond
Weeter, John C.	Louisville

Louisiana

Foley, Thomas H.	Plaquemines
Haik, George M.	New Orleans
Lafleur, Nathan C.	Opelousas
McBride, Wallace M.	Crowley
Yeager, John M.	Alexandria

Maryland

Dausch, Michael J.	Baltimore
Mohr, Walter C.	Baltimore
Robbins, Martin A.	Baltimore
Roseman, Ephraim	Baltimore

Massachusetts

Clancy, Arthur W.	Newbury Port
Harris, Albert E.	Northampton
Michell, Leon G. II	Lynn
Nereo, Oswaldo A.	Quincy
O'Brien, Dalton C.	Cambridge
Valliere, Joseph L.	Chatham

Michigan

Antell, Gunnard J.	Negaunee
Bartlett, Walter M.	Benton Harbor
Davis, David B.	Grand Rapids
Grant, Joseph O.	Detroit
Keyes, James T.	Saginaw
Kleber, John A.	Detroit
Lepisto, Victor E.	Wakefield
Pott, Abraham	Grand Rapids
Roney, Eugene H.	Detroit
Thompson, Arthur B.	Saginaw

Minnesota

Michel, Henry H.	Minneapolis
Murray, Robert A.	Parkers Prairie
Picha, Richard H.	Hopkins
Pratt, Fred J. Jr.	Minneapolis

Mississippi

Butler, George H.	Liberty
Ellis, Donald R.	Columbus
Hall, James L.	Vicksburg
Hughes, James A.	Gulfport
Rotenberry, Clinton G.	Oxford
Shettles, Landrum B.	Pontotoc

Missouri

Banner, Richard E.	Kansas City
Lischer, Carl E.	Webster Groves
Riggs, George T.	Amity

Nevada

Hartman, Charles F.	Reno

New Mexico

Shortle, James S.	Albuquerque

Ohio

Boggs, Joseph D.	Bellefontaine
Bond, Robert G.	Springfield
Curtiss, Edgar J.	Lima
Dingle, John H.	Cleveland
Lawless, Edward C.	Columbus
Meredith, Roy M.	Marietta
Michals, Arnold A.	Cleveland
Muenzer, Robert W.	Elmore
Rock, Harry A.	Chillicothe
Schoenling, John E.	Cincinnati
Steinberg, Abraham H.	Toledo
Williams, Edward T.	Norwalk

Oklahoma

Archer, Homer V.	Oklahoma City
Payne, Richard W.	Oklahoma City
Walker, Dean C.	Pawhuska

Oregon

Ball, Wendell L.	Portland
Carter, Paul I.	Portland
Leong, Richard W.	Portland
McKelvey, Gilbert J.	Portland
Olsen, Ralph L.	Portland
Taylor, Douglas H.	Cloverdale

Rhode Island

Kaiser, Alfred J.	Warren

South Carolina

Creech, Clarence M.	Spartanburg
Lucas, Thomas L.	Chesterfield
Rourk, Malcolm H.	Myrtle Beach

South Dakota

Welty, Dalton M.	Hot Springs

Tennessee

Little, Joseph A.	Nashville
Tacket, Hall S.	Memphis
Westphal, Kean F.	Memphis

Virginia

Davis, Algernon C.	Roanoke
Martin, Berkeley H. Jr.	Richmond
Meyer, George I.	Roanoke
Shaver, Jack S.	Maurertown
Volkin, Leonard B.	Petersburg
Wilson, Robert M. Jr.	Richmond

Alaska

Charteris, William C.	Sitka

Puerto Rico

Gonzalez, Louis	Santurce
Melendez, Pedro C.	Bayamon
Navarro, Felix A.	Bayamon
Sugranes, Jose G.	Maunabo

Liberia

Ricketts, Edwin T.	Harbel

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

University to Expand Medical Center.—The University of California, Berkeley-San Francisco, has purchased 90 acres of land for the contemplated $30,000,000 expansion of its San Francisco Medical Center on Parnassus Heights. Half of the funds needed for the projected expansion have been provided by the state legislature, and plans are nearing completion for a new medical sciences and hospital building.

Tuberculosis Survey in Chinatown.—The San Francisco Tuberculosis and Health Association and San Francisco and state departments of public health are carrying out a tuberculosis case finding program in San Francisco's Chinatown area. X-ray equipment from the state department of public health has been set up in the Chinese Hospital and test plates are being taken five days each week. Local physicians are referring patients to the x-ray center, and the epidemiology is being done by public health nurses of the San Francisco Health Department. Chinatown had a tuberculosis mortality rate last year of 138.9 deaths per hundred thousand of population compared to the entire state rate of 48 for the same period.

CONNECTICUT

New Dean of College of Pharmacy.—Harold G. Hewitt, Ph.D., for twenty-one years with the department of chemistry, University of Buffalo, has been appointed dean of the College of Pharmacy at the University of Connecticut, effective July 1. He is president of the Section on Chemistry, American Association of Colleges of Pharmacy.

Society News.—Dr. Creighton Barker, New Haven, executive secretary of the Connecticut State Medical Society and secretary to the Connecticut Medical Examining Board, has been elected president of the Connecticut Cancer Society. Ira V. Hiscock, Sc.D., chairman of the department of public health at Yale University, was elected vice president, and Miss Grace Mooney, executive assistant of the state medical society, secretary.

DISTRICT OF COLUMBIA

University Appointments.—On July 1 Dr. Edward B. Tuohy, Rochester, Minn., became director of the department of anesthesiology at Georgetown University School of Medicine. He is a graduate of the University of Pennsylvania School of Medicine, Philadelphia, 1932, and has been a member of the staff of the Mayo Foundation for many years. He succeeds Dr. Fred R. Sanderson, resigned, who will retire but continue on the staff of the university as clinical professor of surgery. Dr. Robert J. Coffey became professor of surgery July 1. A graduate of Georgetown University School of Medicine, 1932, he has recently been professor of experimental surgery and instructor in clinical surgery at Georgetown.

FLORIDA

Donner Hall at Palm Beach.—The Donner Foundation, Inc., has deeded a $150,000, sixty-four room building in Palm Beach, Fla., to the Institutum Divi Thomae, Cincinnati, for scientific research. The building, to be known as Donner Hall, was formerly a part of the estate of the late Col. E. R. Bradley and is adjacent to the Institutum's Marine Biological Laboratories. Donner Hall will provide quarters for a marine biophysics laboratory for intensive fundamental research in cancer and quarters for visiting scientists from various parts of the world, who will be invited to participate in a series of symposiums devoted to different fields of research. The Institutum Divi Thomae, founded in 1935 by the archbishop of Cincinnati, is a graduate research school with fourteen affiliated units throughout the United States. William H. Donner, 83, a millionaire Philadelphia steel man who has previously given large sums to cancer study, is director of the Donner Foundation.

IDAHO

State Medical Election.—At the annual meeting of the Idaho State Medical Association at Sun Valley, June 19, Drs. Albert B. Pappenhagen, Orofino, became president, Franklin B. Jeppesen, Boise, president-elect and Wallace Bond, Twin Falls, secretary-treasurer. The 1948 annual meeting will be held at Sun Valley.

ILLINOIS

Emergency Water Supply Insured in Case of Disaster.—The first of six water purifiers capable of meeting the emergency needs in case of disaster in Illinois communities has been received by the state department of health from the American Red Cross. The gas engine driven purifiers are capable of purifying 15 gallons of water per minute and are a part of the disaster preparedness operations in Illinois. Purchased from the War Assets Administration by the Red Cross, the purifiers will be located at strategic points throughout the state. The purifiers are familiar to thousands of American soldiers who served overseas in areas where water from ponds and polluted streams had to be purified for drinking and cooking purposes.

Chicago

Illinois Professors to Retire.—The following retirements at the University of Illinois College of Medicine, Chicago, have been announced, effective September 1: William H. Welker, Ph.D., head of the department of biologic chemistry, who has been on the faculty since 1913 and chairman of the committee on graduate study; Dr. Dietrich Klemptner, an associate in medicine, who joined the university faculty in 1928; Dr. Charles Phifer, professor of surgery, who has taught at Illinois since 1913; Dr. Herman L. Kretschmer, professor of urology, and Dr. Kellogg Speed, professor of surgery, who joined the staff in 1941, when Rush Medical College affiliated with the University of Illinois.

Dr. Luckhardt Made a Distinguished Service Professor.—Dr. Arno B. Luckhardt, professor of physiology at the University of Chicago School of Medicine and discoverer of ethylene gas as an anesthetic, has been designated distinguished service professor of physiology at the university. Dr. Luckhardt received his Ph.D. from the University of Chicago, 1911, his M.D. from Rush Medical College, and honorary degrees from Conception College, Conception, Mo., and Northwestern University, Evanston. He was appointed instructor in physiology in 1912, was made a professor in 1923, and has received the Callahan memorial award for accomplishments in medical research. He is a past president of the American Physiological Society and of the Federation of American Societies for Experimental Biology.

MASSACHUSETTS

Public Health Appointments.—The following appointments have been announced by the state department of health, Boston: as epidemiologists, Drs. Victoria M. Cass; Claire F. Ryder, Brooks Ryder and Joseph H. Hanson. Dr. Nicholas J. Fiumara has been promoted to director, division of venereal diseases, pending qualification by civil service.

Helen Putnam Fellowship Award.—Dr. Frances J. Bonner, Boston, was awarded the Helen Putnam Fellowship for advanced research in genetics or in mental health for the second and final year at commencement exercises, Radcliffe College, June 4. Dr. Bonner was the first recipient of this fellowship, which carries a stipend of $2,000 and is open annually to a mature woman scholar qualified to carry on significant research or creative work. She graduated at Boston University School of Medicine, 1943, and is a research fellow in neuropathology at Harvard Medical School. She will continue research which she has been carrying on during the present academic year on the hereditary factors in hysteria.

MISSOURI

Jackson County Installation Banquet.—More than 350 members of the Jackson County Medical Society attended the sixty-fifth annual installation banquet in Kansas City June 26. Dr. Robert L. Hoffman was installed as president. Rev. Thomas McCartan Knapp, S. J., president of Rockhurst College, Kansas City, spoke on "The Soul and the Doctor." Recognition of the centennial year of the American Medical Association was made by the inclusion inside the program cover of four of the special three cent stamps bearing the reproduction of the painting "The Doctor." Two laymen were presented gold keys and citations. Mr. Arthur B. Eisenhower, vice president of the Commerce Trust Company, was cited for his leadership in the Jackson County cancer fund campaign, and Conwell Carlson, reporter for the Kansas City *Star*, was cited for "lifting the curtain on medical news in Kansas City." The society has a membership of 680.

NEBRASKA

State Medical Election.—At the May annual meeting of the Nebraska State Medical Association Dr. George E. Charlton, Norfolk, became president, and Dr. James E. M. Thomson, Lincoln, was made president-elect; Drs. Milton H. Carrig, Bloomfield, and Earle E. Farnsworth, Grand Island, vice presidents; Roy B. Adams, Lincoln, secretary, and Mr. M. C. Smith, Lincoln, executive secretary.

Appoint Head of New County Health Department.—Dr. Corinne S. Eddy is health director for the newly created Lincoln and Lancaster County Health Department. The new unit is an extension of the Lincoln City Health Department, authorized by the legislature to include all Lancaster county citizens. Dr. Eddy received her Ph.D. at the University of Chicago and her medical degree from the University of Illinois College of Medicine, Chicago. She has done public health work in Alabama and Mississippi.

NEW MEXICO

State Medical Election.—At the annual session of the New Mexico Medical Society in May Dr. Victor K. Adams, Raton, became president. Philip L. Travers, Santa Fe, was named president-elect, and H. L. January, Albuquerque, secretary-treasurer.

NEW YORK

Meeting of School Physicians.—New York State's Association of School Physicians and the School Nurse Teachers Association will meet with the Annual Conference of Health Officers and Public Health Nurses at the Grand Union Hotel, Albany, July 28. The presidential address will be given by Dr. Edgar Bieber, Dunkirk. Dr. Francis H. Marx, Oneonta, will speak on "The Wetzel Grid"; Dr. Konrad E. Birkhaug, New York State Department of Health, Albany, on "BCG Vaccination"; Col. Herbert Pollack, New York, "Malnutrition in the Armed Forces and in Concentration Camps and Its Significance in the School Health Program," and Dr. Albert D. Kaiser, health officer, Rochester, "The Spastic Child and the School."

Tristate Medical Meeting.—Chautauqua County Medical Society will sponsor its twelfth annual interstate medical meeting at the Chautauqua Institution grounds at Chautauqua Lake July 24. On the medical program Dr Abraham H. Aaron, moderator, William F. Lipp and Leon J. Leahy, all of Buffalo, and George W. Crile, Cleveland, will participate in a discussion of peptic ulcer. The "Present Status of Thyroid Disease" will be discussed by Dr. Crile and Dr. John H. Talbott, professor of medicine at the University of Buffalo Medical School; and Dr. Paul D. White, Boston, will speak on "Recent Advances in Our Knowledge of Heart Disease." Physicians from western New York, northwestern Pennsylvania and the northeastern corner of Ohio are invited to attend.

New York City

Personal.—Dr. Adolph G. Kammer, Oak Ridge, Tenn., has been appointed director in charge of the medical activities of all plants of Carbide and Carbon Chemicals Corporation and will be located at South Charleston, W. Va. He is a graduate of the University of Pennsylvania School of Medicine, 1928. ——Dr. Burton L. Zohman has been appointed attending physician to the Long Island College Division of Kings County Hospital in Brooklyn and associate professor of clinical medicine at the Long Island College of Medicine.——Dr. Harold A. Abramson, assistant professor of physiology, Columbia University College of Physicians and Surgeons, and associate physician for allergy, Mount Sinai Hospital, has been appointed consulting physician for allergy at the Sea View Hospital, Staten Island.

Dr. Loeb Made Bard Professor of Medicine.—Dr. Robert F. Loeb has been appointed Bard professor of medicine at Columbia University College of Physicians and Surgeons and director of the medical service at Presbyterian Hospital effective July 1, succeeding Dr. Walter W. Palmer, who became emeritus professor and a consultant of the Presbyterian Hospital. Dr. Loeb received his medical degree from Harvard Medical School, Boston, 1919. He has been associated with Presbyterian Hospital for many years and was associate medical director of the Neurological Institute 1938-1941. In 1942 he became Lambert professor of medicine and attending physician at Presbyterian Hospital. During the late war he was a consultant to the Office of Scientific Research and Development and chairman of the Board for the Coordination of Malarial Studies, charged with the responsibility of developing new drugs for the management of malaria. He recently served as chairman of the Board of Review of the United States Atomic Energy Commission. He is chairman of the Fellowship Board of the National Research Council and a past president of the American Society for Clinical Investigation.

OHIO

License Revoked.—Dr. Lloyd L. Jones, Columbus, has been convicted of criminal abortion by the Franklin County Court of Common Pleas, and his certificate to practice medicine was revoked by the board, according to the *Ohio State Medical Journal.*

Personal.—Dr. Thomas A. Gardner, Springfield, assistant public health director of the city since last October, assumed his duties recently as director of health.——Dr. Drew L. Davies, Columbus, has been appointed national chairman of the services on first air, water safety and accident prevention of the American Red Cross.

Hospital News.—Contracts have been recently let for the construction of a 105 bed hospital addition at the Stillwater Sanatorium (District Tuberculosis Hospital) at Dayton, jointly operated by Montgomery and Preble counties. The superintendent of the 107 bed hospital is Dr. Everett F. Conlogue.

UTAH

Appoint Head of Department of Obstetrics and Gynecology.—Dr. Emil G. Holstrom, associate professor in the department of obstetrics and gynecology, has been named professor and head of the department to succeed Dr. Charles E. McLennan, who has accepted an appointment as chairman of the department of obstetrics and gynecology at Stanford University School of Medicine, Stanford University-San Francisco. A graduate of the University of Minnesota Medical School, Minneapolis, 1938, he was a teaching fellow in obstetrics and gynecology at Minnesota University hospitals. He was on the staff of Salt Lake General Hospital, and later an instructor in his field at the University of Minnesota School of Medicine, Minneapolis, 1942-1943, and from there came to the University of Utah School of Medicine as an associate professor.

Cancer Research.—A total of $25,805 has been allocated to the University of Utah School of Medicine, Salt Lake City, by the American Cancer Society in the form of three research grants and one fellowship. This includes $3,000 per annum to be given to Dr. Charles M. Huguley Jr., fellow in medicine under the guidance of Dr. Maxwell M. Wintrobe, professor and head of the department of medicine; $4,560 allotted to Dr. Wintrobe for the study of halogenated amines and related compounds and of irradiation in the management of leukemia, Hodgkin's disease and lymph node diseases, and $10,395 granted to Dr. George Sayers, Ph.D., for work on urinary output and adrenocorticotropin and regulation of pituitary adrenocorticotropic activity. The remainder was granted to support a study by Dr. H. Henry Lerner, professor and head of the department of radiology, on the protective and therapeutic action of roentgen radiation and chemical agents in mice with experimental leukemia and lymphosarcoma.

WISCONSIN

University to Repeat Infantile Paralysis Course.—The University of Wisconsin Medical School, Madison, will repeat the intensive course in the diagnosis and therapy of poliomyelitis July 21-26 at the Medical School and the State of Wisconsin General Hospital as well as the Wisconsin Orthopedic Hospital for Children. Again this course is being presented by the medical school in cooperation with the county chapters of the National Foundation for Infantile Paralysis, Inc., throughout Wisconsin. Thirty-three physicians attended the course during its first offering. Details can be obtained from Dr. Llewellyn R. Cole, Coordinator of Graduate Medical Education, Medical School, University of Wisconsin, 418 North Randall Avenue, Madison 6, Wis.

WYOMING

State Medical Election.—At the meeting of the Wyoming State Medical Society in Sheridan June 23-25 Dr. Emory W. DeKay, Laramie, became president. Dr. George E. Baker, Casper, was named president-elect; Drs. Dewitt Dominick, Cody, vice president; George H. Phelps, Cheyenne, secretary, and Peter M. Schunk, Sheridan, treasurer. Mr. Arthur Abbey of Cheyenne was appointed executive secretary, and Dr. E. Earl Whedon, Sheridan, is the newly appointed editor of the state journal.

PUERTO RICO

Committee Studies Need for Doctors and Nurses.—A joint committee of the Puerto Rico Medical Association and lawmakers is undertaking a comprehensive survey of the needs of doctors and nurses here. All the government agencies and municipalities have been contacted in an effort to recommend measures against the shortage in these professions and to improve medical services. The committee is composed of Drs. Juan A. Pons, health commissioner; A. Oliveras Guerra, Manuel Astol, Jerenfel Cordero, representing the Puerto Rico Medical Association and the department of health, and Senators Vicente Geigel Polanco, Francisco Anselmi and Adolfo Monserrate. A list of all vacancies for doctors in government institutions and municipalities is being prepared as well as a list of all young medical students now studying medicine in continental United States and other countries. The list comprises also all medical students who have graduated through scholarships offered by the University of Puerto Rico and other institutions here as well as data on foreign physicians who are now working for government institutions in the island.

GENERAL

Board of Pathology Examination.—The American Board of Pathology has declared that after Jan. 1, 1948 all applicants for certification will be required to take the examinations of the board. The last meeting of the American Board of Pathology before this date will be October 24-25 in Chicago.

New Society for Study of Arteriosclerosis.—The American Society for the Study of Arteriosclerosis was created in Atlantic City, June 9. Dr. Wilhelm C. Hueper, New York, was elected president, William B. Kountz, St. Louis, vice president, and Dr. Otakar J. Pollak, Wilmington, Del., secretary-treasurer.

Opium Traffic Increases.—Traffic in prepared opium has been rising since 1944, the federal narcotics commissioner, Washington, D. C., said June 7 in his report for 1946. The aggregate weight of seizures at the borders and ports was 22,471 ounces, compared with 9,567 in 1945. Most of the raw opium seized, it was said, originated in Iran.

National Medical Association Meeting.—The fifty-second annual convention of this association will meet at the Jefferson High School, Los Angeles, August 18-22 under the presidency of Dr. Walter A. Younge, St. Louis, as guests of the Southern California Medical, Dental and Pharmaceutical Association. There will be general meetings, section meetings, round table discussions and a program of entertainment. The annual oration in medicine will be given by Dr. William G. Tyson, Savannah, Ga., on "Cryptorchism and Gynecomastia."

New Foundation for Research in Rheumatic Fever.—An announcement was made July 7 of the formation of the Helen Hay Whitney Foundation for basic scientific research in rheumatic fever. The distributing committee of the foundation are Mrs. Charles S. Payson (Joan Whitney), New York; John Hay Whitney, New York; Frederick K. Trask Jr. and William Harding Jackson, New York. Dr. T. Duckett Jones, Boston has been appointed medical director of the foundation with temporary offices in the New York Hospital, 525 East 68th Street, New York. Dr. Jones stated that the purpose of the foundation is to make possible research which may increase our knowledge of rheumatic fever.

Cancer Foundation Names President.—Abbott Kimball, president of Abbott Kimball Company, Inc., New York, on June 3 accepted the presidency of the National Cancer Foundation, Inc., created last May "to press for government action against cancer and to lead other activities seeking care of cancer victims not now handled by an organized group." Mr. Kimball has served as treasurer of the foundation. He succeeds Julius J. Perlmutter. The foundation expects to establish a series of advanced cancer hospitals throughout the United States. The foundation, with headquarters at 85 Franklin Street, New York, has just been granted a charter as a corporation under the laws of the state of New York.

Dr. Eliot on Leave from Children's Bureau.—The United Nations is to conduct a survey of the relief programs being carried out in seven central and eastern European countries by its International Children's Emergency Fund, under the direction of Dr. Ludwig Rajchman, chairman of the board, which operates the emergency fund. Dr. Martha M. Eliot, associate chief, U. S. Children's Bureau, and president-elect of the American Public Health Association, now on leave from the bureau, will be chief medical consultant. A group of four health and medical officers will spend several weeks touring children's institutes and inspecting other facilities. It is expected that the Emergency Fund will help feed 20,000,000 children through the national relief services which have been set up in each country.

Nutrition Awards.—The American Institute of Nutrition made two awards at its annual dinner in Chicago May 19. The Borden award for 1947 was presented to Leonard A. Maynard, Ph.D., Ithaca, N. Y., for contributions to the physiology of milk secretion, factors affecting milk production and milk composition, and the requirements of animals for dietary fats. The Mead Johnson and Company award for research on the vitamin B complex was presented to Dr. William J. Darby, associate professor of biochemistry, Vanderbilt University School of Medicine, Nashville, Tenn., Paul L. Day, Ph.D., professor of physiologic chemistry, University of Arkansas School of Medicine, Little Rock, and E. L. Robert Stokstad, Ph.D., research chemist, Lederle Laboratories, Pearl River, N. Y., for their investigations on B complex vitamins with special reference to studies on the chemistry and nutritional significance of folic acid.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

	Week Ended			Total to		Total *	
Division and State	July 5, 1947	July 6, 1946	Median, 1942-1946	July 5, 1947	July 6, 1946	March 16-July 5, 1947	March 17-July 6, 1946
New England:							
Maine	1	1	0	7	3	4	3
New Hampshire	0	1	0	5	3	1	2
Vermont	0	0	0	8	7	0	3
Massachusetts	4	0	0	12	7	5	3
Rhode Island	2	0	0	6	0	5	0
Connecticut	0	2	2	8	15	5	7
Middle Atlantic:							
New York	8	10	10	89	113	53	80
New Jersey	4	2	2	20	21	14	15
Pennsylvania	1	2	1	19	32	5	20
East North Central:							
Ohio	6	8	5	28	47	18	32
Indiana	1	2	2	21	18	5	13
Illinois	3	13	5	49	79	27	71
Michigan	3	1	1	38	16	14	8
Wisconsin	0	0	0	24	16	0	3
West North Central:							
Minnesota	2	20	2	25	41	12	40
Iowa	0	7	2	18	35	10	26
Missouri	1	13	1	24	35	14	28
North Dakota	0	0	1	18	3	13	3
South Dakota	0	0	0	2	3	0	3
Nebraska	3	3	0	30	7	23	6
Kansas	1	4	2	21	37	3	33
South Atlantic:							
Delaware	0	0	0	1	1	1	1
Maryland	1	1	0	12	5	6	3
District of Columbia	0	0	0	3	1	1	0
Virginia	3	1	1	19	10	9	4
West Virginia	0	0	0	5	8	1	5
North Carolina	1	5	1	22	37	7	30
South Carolina	0	0	0	4	11	3	8
Georgia	2	15	4	18	46	11	38
Florida	0	32	2	48	314	23	265
East South Central:							
Kentucky	0	4	2	13	24	12	21
Tennessee	0	4	4	18	22	6	13
Alabama	0	25	5	23	122	10	119
Mississippi	0	7	1	22	45	5	28
West South Central:							
Arkansas	0	11	3	20	38	10	26
Louisiana	4	14	3	33	86	15	67
Oklahoma	4	10	6	20	49	9	43
Texas	3	45	21	72	337	47	309
Mountain:							
Montana	2	1	0	4	24	2	8
Idaho	0	0	0	13	1	3	1
Wyoming	0	1	0	4	2	1	1
Colorado	1	22	1	16	104	11	103
New Mexico	1	1	0	6	16	3	15
Arizona	0	3	0	11	10	8	7
Utah	0	1	0	5	13	0	7
Nevada	0	0	0	0	0	0	0
Pacific:							
Washington	2	2	0	25	58	17	25
Oregon	0	0	0	9	5	4	1
California	31	17	17	377	236	228	149
Total	95	311	..	1,295	2,163 †	684	1,696
Median, 1942-1946	..	...	245	1,329			

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* Last two columns show incidence since approximate seasonal low week (week ended between March 15 and 21).

† Figures changed by corrected reports.

Medical Women's Library Fund.—The American Medical Women's Association is planning to raise $500,000 to erect a building for the Medical Women's Library, which came into its possession in 1933. The Woman's Medical College of Pennsylvania, Philadelphia, donated the site and will assume responsibility for its upkeep. The collection was presented to the American Medical Women's Association by Dr. Bertha Van Hoosen, Chicago, at the close of the Century of Progress exposition and has been housed in the Quine Library, 1853 Polk Street, Chicago. A trained librarian gives half time service to the supervision and upkeep of files, correspondence, books, manuscripts, press notices and other details. The library collects articles or information by or about women in science and maintains up to date information concerning women physicians and material memorializing pioneer women of science. It functions through a committee. Annual or life memberships may be secured for $10 and $100, respectively, book memberships for $2 or Sadler Memorial Memberships for $1. Checks may be made to Dr. Bertha Van Hoosen, Chairman, American Medical Women's Association, 25 East Washington Street, Chicago.

Foreign Group to Study American Blood Program.—Scholarships for the study of blood and its derivatives have been offered to a selected group from foreign countries by the American Red Cross in cooperation with the League of Red Cross Societies. The candidates will be proposed by the national Red Cross societies and will be selected on a basis of personal and professional qualifications as well as on the need in their country for information on the use of blood fractions. The scholarships will be for nine to twelve months of study in the United States and will have a value of $2,500-$3,000. The training will include study of method of recruiting donors, collecting and processing blood, processing plasma and the uses of blood and blood derivatives in medicine and public health. Field work will be done in North Dakota for mobile field laboratory operation, in Michigan for its state plan of plasma fractionation and in Miami, Fla., for private blood bank maintenance. Details of the training were worked out by Dr. Warren F. Draper, Washington, D. C., assistant administrator, Medical Services, American Red Cross, in cooperation with Dr. Charles A. Janeway of Boston, chairman of the Red Cross Advisory Committee on Blood and Blood Derivatives.

Appoint Epidemic Coordinator.—The National Foundation for Infantile Paralysis, 120 Broadway, New York, has created an office of epidemic coordinator to insure maximum efficiency in meeting the challenge of poliomyelitis this summer. All epidemic activities of the national office will be channeled through the office of Epidemic Coordinator West J. Altenburg. He will be assisted by a committee: Dr. Hart E. Van Riper, Scarsdale, N. Y., medical director; Louis H. Haughey, comptroller, and George H. LaPorte, director of public relations. The epidemic coordinator's responsibility will be the speedy recognition of danger spots, correlation of information and of national office and field activities, and the evaluation of requests from the field to avoid duplication of effort. Equipment pools, each with respirators and hot pack machines, have been established by the foundation in Boston, Columbus, Ohio, and Des Moines, Iowa. Four epidemic aid teams, each consisting of an epidemiologist, orthopedist, pediatrician, an orthopedic nurse and two physical therapists, are ready to go into any epidemic area at the request of state health departments. The foundation reports that the country is better equipped to cope with infantile paralysis outbreaks than ever before and that cooperation between official and private agencies, state and county health departments, general hospitals, medical and nursing groups and the National Foundation has been improved.

International College of Surgeons.—The twelfth annual assembly and convocation of the United States chapter of the International College of Surgeons will meet September 28-October 4 at the Palmer House, Chicago, under the presidency of Dr. Herbert A. Acuff, Knoxville, Tenn. A combined operative and clinical program has been arranged. Besides numerous authorities, members of the United States chapter, the following visitors will be on the program: Dr. Hamilton Bailey, London, England; Dr. Raymond Darget, Bordeaux, France, "Treatment of Inveterate Cystitis by Infiltration of the Nervi Erigentes and Denervation of the Bladder"; Dr. Basil Hughes, Cornwall, England, "Lister's Conceptions and Those of Today"; Dr. William O. Lodge, Halifax, England, "Transantral Approach to the Gasserian Ganglion"; Dr. Felix Mandl, Jerusalem, Palestine, "Sympathetic Block in Sympathetic Surgery"; Dr. J. Almeida Rios, Rio de Janeiro, "Surgical Treatment of Osteomyelitis"; Dr. August Maria Sisson, Porto Alegre, Brazil, "New Technic to Produce Better Apical Collapse of the Lung"; Dr. Alex W. Spain, Dublin, Ireland, "Symphysiotomy in Modern Obstetrics."

On October 3 operative clinics, round table discussions and demonstrations will be held at Cook County Hospital under the direction of Dr. Karl A. Meyer, and clinics will be given October 4 at many Chicago hospitals. Dedication of the home of the United States chapter of the International College of Surgeons, the Blair mansion, 1516 Lake Shore Drive, purchased earlier this year, will take place at 8 p. m. October 2. The annual banquet will be held at the Palmer House at 6 o'clock October 1, and convocation will be at the Stevens Hotel, October 3, at 8 p. m. Reservations should be made promptly by writing Dr. Francis D. Wolfe, Chairman, Housing Committee, International College of Surgeons, % Chicago Convention Bureau, 33 North LaSalle Street, Chicago 2.

FOREIGN

Bubonic Plague in Haifa.—Palestine Senior Medical Officer Dr. James S. M. Pollock reported July 7 that bubonic plague had stricken 14 persons at Haifa. Antiplague measures launched by health authorities include a widespread rat extermination campaign, the spraying of infected areas with DDT and warnings to the population to take certain preventive measures.

Acta Urologica.—A new periodical under this title aims to publish special articles in the field of surgical urology and allied fields of medical science. It is a joint publication of the Clinic for Surgical Urology of the Pazmany Peter University of Budapest and the Publishing Company of the Free Union of the Hungarian Physicians and Surgeons. It will be published in English, French, Russian and German and will appear six times a year. The editors are A. Babics and E. Szold of Budapest, and on the board of collaborators are names from Vienna, Paris, Bern, Prague, Bratislava, Bucharest and Copenhagen.

CORRECTION

Postgraduate Courses for Practicing Physicians.—In the June 21 issue of THE JOURNAL, page 734, the second institution and course listed should read American College of Radiology, 20 North Wacker Drive, Chicago; at various cities during the year; radiology; one week; $50.

Marriages

GEORGE LEONARD EMMEL III, Gainesville, Fla., to Miss Rachel Bushnell Rodenbach of Naugatuck, Conn., March 29.

EVERT ALFRED LARSSON, Trenton, N. J., to Miss Torborg Margareta Eriksson in Lidköping, Sweden, February 9.

FRANCIS LEO MCNELIS, Pawtucket, R. I., to Miss Shirley Lucille Grube at Pocantico Hills, N. Y., June 21.

EUGENE B. MELINKOFF, Los Angeles, to Miss Beryl Cameron of San Francisco in Las Vegas, Nev., recently.

JOHN WESTON MANDEVILLE, Muskegon, Mich., to Miss Marilyn Ann Thomas of Detroit March 22.

LOGAN OLIVER JONES, Charlotte, N. C., to Miss Joan Duncan Shaw of Greenwich, Conn., March 15.

ALFRED E. GREENWALD, New York, to Miss Leatrice Joy Fleishman at Newark, N. J., June 15.

JOHN LEWIS READ, Camden, N. J., to Miss Dorothy Patricia Diana of Sharpsville, Pa., February 8.

JOHN C. MARKLEY, Georgetown, Ohio, to Miss Eleanore Dundon at Cincinnati February 15.

EDWIN S. OLSAN, Rochester, N. Y., to Miss Dorothy R. Dryfoos of New York January 23.

JOSEPH MARKEL, Staten Island, N. Y., to Miss Barbara Klauber of New York March 14.

JOHN EUGENE RAY to Miss Jane Rooks Tuttle, both of Humboldt, Tenn., Dec. 30, 1946.

VINCENZO R. ONORATO, Montclair, N. J., to Miss Ida Di Bella of Verona in February.

ROBERT HUGH MANHEIMER to Miss May Rosner, both of New York, March 2.

JACK H. LEVY, Newington, Conn., to Miss Beatrice Bogin at Hartford March 15.

WOODROW MILLER to Miss Joyce Lee Davidson, both of Los Angeles, recently.

Deaths

Thomas Martin Joyce ⊕ Portland, Ore.; born in Emmetsburg, Iowa, Jan. 28, 1885; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; an intern and surgical assistant at St. Mary's Hospital, Rochester, Minn.; during World War I chief surgeon at Base Hospital number 46, serving with the American Expeditionary Forces; Kenneth A. J. Mackenzie professor of surgery and head of the department at the University of Oregon Medical School; chairman, Section on Surgery of the American Medical Association, 1939-1940; member of the founders group of the American Board of Surgery; formerly vice president of the American Association for the study of Goiter and the Pacific Coast Surgical Association; member of the American Surgical Association, Portland Academy of Medicine, Southern Surgical Association, North Pacific Surgical Association and the American Association for the Study of Trauma; fellow of the American College of Surgeons; attending surgeon at St. Vincent's Hospital; head of the department of surgery at the Portland Clinic and the Multnomah County Hospital, where he died April 18, aged 62, of coronary thrombosis.

Oscar Theodore Schultz, Evanston, Ill.; Johns Hopkins University School of Medicine, Baltimore, 1903; past president of the Illinois Society of Pathologists; member of the American Association of Pathologists and Bacteriologists; specialist certified by the American Board of Pathology; veteran of the Spanish-American War and World War I; for many years on the staff of the Michael Reese Hospital in Chicago and St. Francis Hospital; died in the Veterans Administration hospital March 7, aged 69, of acute cholangitis, miliary liver abscesses and old hemiplegia.

Virginia Pereira Alvarez-Hussey, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1920; died in the Woman's Hospital April 12, aged 56, of malignant hypertension and cardiac decompensation.

Frank Leroy Andrews ⊕ Chicago; Chicago College of Medicine and Surgery, 1916; on the staff of the Grant Hospital; died April 19, aged 61, of cerebral hemorrhage.

Harold Taylor Antrim ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1917; served during World War I, as city police surgeon and on the staffs of the Episcopal Hospital and Stetson Hospital, where he died April 28, aged 54, of hemorrhage due to esophageal varices and portal cirrhosis.

Harry N. Azar ⊕ Wheeling, W. Va.; Georgetown University School of Medicine, Washington, D. C., 1928; killed in an airplane accident near Moundsville April 20, aged 47.

Louise W. Beamis-Hood ⊕ Buffalo; University of Buffalo School of Medicine, 1919; for many years secretary of the Medical Society of the County of Erie; served as president of the Women's Medical Society of the State of New York and as vice president of the Medical Women's National Association; died in the Buffalo General Hospital April 12, aged 68, of hypertension and myocardial infarction.

Robert L. Bean, Cleveland, Tenn.; Chattanooga Medical College, 1898; served on the county draft board during World War I; died April 19, aged 80, of myocarditis.

Jacob Andrew Bieri Jr., St. Louis; St. Louis University School of Medicine, 1930; member of the American Medical Association; formerly on the faculty of his alma mater; died in the Alexian Brothers Hospital April 12, aged 41, of cirrhosis of the liver and rheumatic heart disease.

Enos Hoyt Bigelow, Framingham, Mass.; Harvard Medical School, Boston, 1882; member of the American Medical Association; past president of the Massachusetts Medical Society and the Middlesex South District Medical Society; served in the state legislature; chairman of the board of health and the school committee; on the staff of Framingham Hospital; died March 13, aged 91, of arteriosclerosis.

Joseph Emanuel Blasenstein, New York; Columbia University College of Physicians and Surgeons, New York, 1920; specialist certified by the American Board of Pediatrics; for many years affiliated with the contagious disease division of the city health department; member of the staffs of the Sydenham and Morrisania hospitals; died April 3, aged 50, of coronary thrombosis.

Alta Emma Cullen Bordner, Duncan Okla.; Northwestern University Woman's Medical School, Chicago, 1892; for many years affiliated with the Colorado State Hospital in Pueblo, Colo.; died in the Lindley Hospital April 2, aged 72, of coronary thrombosis.

Joseph G. Bosley, Richmond, Ky.; University of Louisville Medical Department, 1892; served as county health officer; director of the Richmond Building and Loan Association; on the staffs of the Pattie A. Clay Infirmary and the Gibson Hospital where he died April 7, aged 79, following an operation for Hirschsprung disease.

Thomas McGrath Brennock ⊕ Jersey City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1917; past president and secretary of the Hudson County Medical Society; fellow of the American College of Surgeons; diagnostician for the city board of health; served during World War I; affiliated with the Margaret Hague Hospital, Greenville Hospital, Fairmont Hospital and the Medical Center, where he was chief of the gynecologic service and where he died April 3, aged 55, of carcinoma of the bladder.

Alcus James Carter, Dayton, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1911; served as president of the Jones County (Miss.) Medical Society; formerly superintendent of the South Mississippi Charity Hospital, Laurel; died April 17, aged 64, of cerebral hemorrhage.

Crawford Haralson Cleveland ⊕ Anniston, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; on the staff of the Anniston Memorial Hospital; president of the Y. M. C. A. board of directors; director of the Anniston Chamber of Commerce and the Commercial National Bank; died in Emory Hospital, Atlanta, April 2, aged 58, of glioblastoma.

Elmer Sherman Clouting ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1896; affiliated with the Philadelphia General Hospital for many years; died in the Chestnut Hill Hospital April 29, aged 75, of nephritis and edema of the lungs.

John Andrew Collins ⊕ Washington, D. C.; Washington University School of Medicine, St. Louis, 1902; fellow of the American College of Surgeons; member of the staff of the Episcopal Eye, Ear and Throat Hospital; died April 9, aged 69, of pulmonary edema.

Sidney James Colton ⊕ Johnstown, N. Y.; University and Bellevue Hospital Medical College, New York, 1909; for many years public school physician; served on the staff of the Nathan Littauer Hospital in Gloversville; died April 8, aged 62, of coronary occlusion.

Percy Ray Cruse, Houston, Texas; Memphis (Tenn.) Hospital Medical College, 1912; member of the American Medical Association; chief consulting surgeon for the Burlington-Rock Island Railroad; died March 28, aged 59, of cerebral hemorrhage.

Hiram Day, Maryville, Mo; Ensworth Medical College, St. Joseph, 1892; served as county physician and as deputy state health commissioner; on the staff of St. Francis Hospital; died April 11, aged 78, of coronary sclerosis.

Frank K. Doane, St. Louis; St. Louis College of Physicians and Surgeons, 1905; served on the staffs of the Christian and St. John's hospitals; died April 27, aged 65, of heart disease.

John Donnelly, Charlotte, N. C.; University of North Carolina School of Medicine, 1905; member of the American Medical Association and the American College of Chest Physicians; past president of the Southern Sanatorium Association; served in France during World War I; formerly superintendent of the Mecklenburg Sanatorium in Huntersville; died April 9, aged 68, of cerebral hemorrhage.

Charles John Edwards, Vicksburg, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1907; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; served during World War I; on the staff of the Vicksburg Hospital, Mercy Hospital and Vicksburg Infirmary; died March 13, aged 62, of coronary thrombosis, arteriosclerotic heart disease and chronic nephritis.

James Washington Ethridge, Lucy, Tenn.; University of Tennessee Medical Department, Nashville, 1899; served on the staffs of the Methodist, John Gaston, Baptist and St. Joseph's hospitals in Memphis; died April 14, aged 73, of heart disease.

Charles Israel Granstein, Chicopee, Mass.; Tufts College Medical School, Boston, 1910; died in the Mercy Hospital, Springfield, April 11, aged 59, of angina pectoris.

Leopold Sanford Gumberts ⊕ Chicago; Jenner Medical College, Chicago, 1908; died April 27, aged 83, of chronic myocarditis.

Alpheus Tisdale Hafford ⊕ Albion, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1913; fellow of the American College of Surgeons; city health officer; on the staff of the Sheldon Memorial Hospital; died in Battle Creek April 23, aged 57, of coronary thrombosis.

Emory Sylvester Hall ⊕ McLeansboro, Ill.; Northwestern University Medical School, Chicago, 1908; served overseas during World War I; captain, medical reserve corps, not on active duty; owner of the McLeansboro Hospital; died April 4, aged 73, of coronary thrombosis.

Harold Charles Harpfer ⊕ Wheeling, W. Va.; University of Pennsylvania School of Medicine, Philadelphia, 1926; member of the medical staffs of the Ohio Valley General and the Wheeling hospitals; died April 1, aged 46, of coronary thrombosis.

Eric Albert Hartley ⊕ Chicago; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1913; associated with the Columbus Hospital; served an internship and residency at the Knickerbocker Hospital in New York and the American Hospital in Chicago, where he died April 10, aged 59, of carcinoma.

William Davis Hawker, St. Louis; St. Louis University School of Medicine, 1911; member of the American Medical Association; died in the Deaconess Hospital April 3, aged 73, of septicemia.

Major Joel Henderson, Baker, Fla.; Rush Medical College, Chicago, 1937; died April 1, aged 38, of rheumatoid arthritis.

William Clarence Hess ⊕ Cresco, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; president of the Howard County Medical Society; president of the staff of the Mercy Hospital; died April 6, aged 72, of heart disease.

John Thomas Hickerson, Kansas City, Mo.; Marion-Sims College of Medicine, St. Louis, 1892; served during World War I; died March 10, aged 80.

William A. Hillemeyer ⊕ Chicago; Jefferson Medical College of Philadelphia, 1896; member of the staff of the Woodlawn Hospital; died April 5, aged 71, of coronary occlusion.

James Arthur Holley, Walton, N. Y.; Albany Medical College, 1886; member of the American Medical Association; died April 20, aged 92, of heart disease.

Irving Woodward Hollingshead ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1894; on the staff of the Methodist Hospital, where he died April 23, aged 75, of pneumonia.

Harwood Leroy Hollis ⊕ Lacona, N. Y.; Syracuse University College of Medicine, 1920; past president of the Oswego County Medical Society; fellow of the American College of Chest Physicians and the American Trudeau Society; member of the village board; formerly a member of the board of education of Sandy Creek High School; served as president of the First National Bank of Lacona; superintendent of the Oswego County Sanatorium in Richland; died April 28, aged 52, of coronary thrombosis.

Thomas Jefferson Houston, Meridian, Miss.; University of Tennessee Medical Department, Nashville, 1889; served during World War I; formerly city health officer; at one time on the faculty of the Mississippi Medical College; died April 18, aged 81.

George Stem Hulick, Aldan, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1943; member of the American Medical Association; interned at the Hahnemann Hospital; served during World War II; was accidentally shot and killed March 29, aged 30, while cleaning a pistol.

William Otis Hunt, North Falmouth, Mass.; Harvard Medical School, Boston, 1877; member of the American Medical Association; for many years on the staff of the Newton (Mass.) Hospital; died in Wiscasset, Maine, April 19, aged 92, of cerebral hemorrhage.

Adolph Xavier Kamm, Ashland, Wis.; the Hahnemann Medical College and Hospital, Chicago, 1918; member of the American Medical Association; on the staff of St. Joseph's Hospital; died March 30, aged 57, of coronary occlusion.

Herbert Weaver Kendell ⊕ Covington, Ohio; Ohio Medical University, Columbus, 1898; for many years member of the board of education, director and president of the Covington Building and Loan Company; served on the staff of the Piqua (Ohio) Memorial Hospital; died March 16, aged 71, of cerebral hemorrhage.

Harriet Ann Knott, Saginaw, Mich.; New York Medical College and Hospital for Women, Homeopathic, New York, 1894; died in Midland March 17, aged 79, of pneumonia.

George Abraham Lassman ⊕ New York; College of Physicians and Surgeons, Baltimore, 1906; member of the American College of Chest Physicians; died April 3, aged 63, of heart disease.

Isidor Morris Lavine ⊕ Mount Rainier, Md.; George Washington University School of Medicine, Washington, D. C., 1941; also a lawyer; diplomate of the National Board of Medical Examiners; interned at the Gallinger Municipal Hospital in Washington, D. C.; affiliated with the Prince Georges' General Hospital, Cheverly, where he was secretary of the staff; on the staffs of the Sibley and Children's hospitals in Washington, D. C.; died April 5, aged 42, of coronary occlusion.

Edward McCrady L'Engle, Jacksonville, Fla.; Johns Hopkins University School of Medicine, Baltimore, 1902; served as secretary-treasurer of the Florida Public Health Association; for many years director of the bureau of vital statistics and formerly member of the state board of health; for many years trustee of the city public library and president of the board of directors of St. Luke's Hospital; died April 19, aged 68, of cerebral hemorrhage.

Isaac Richard Le Sage, Huntington, W. Va.; Medical College of Ohio, Cincinnati, 1888; died April 30, aged 81.

Frank Liberson, New York; Long Island College Hospital, Brooklyn, 1917; specialist certified by the American Board of Radiology; member of the American College of Radiology; served with the U. S. Public Health Service; roentgenologist at the radiologic clinic at U. S. Marine Hospital number 13 on Staten Island; died April 16, aged 58, of coronary occlusion.

Walter Lineback, La Belle, Fla.; Cincinnati College of Medicine and Surgery, 1897; died March 27, aged 79, of acute dilatation of the heart.

Walter M. McGaughey ⊕ Greencastle, Ind.; Medical College of Indiana, Indianapolis, 1902; county and city health officer; veteran of the Spanish-American War; surgeon for the New York Central and Pennsylvania Railroad; died March 24, aged 75, of coronary disease.

John Malcolm Maples, Florence, Ala.; University of Louisville (Ky.) School of Medicine, 1907; member of the American Medical Association; died in Selma March 21, aged 74, of coronary thrombosis.

Milton Leon Mooney, Mountain Home, Ark.; College of Physicians and Surgeons, Little Rock, 1907; served as health officer of Baxter County; died April 1, aged 70, of cerebral hemorrhage.

Howard Delano Moore, Danbury, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1893; member of the American Medical Association; served on the staff of the Danbury Hospital; died March 28, aged 79, of gangrene of the foot, diabetes mellitus and general arteriosclerosis.

Carroll Hampton Morgan, Memphis, Tenn.; Chattanooga Medical College, 1910; member of the American Medical Association; died in the Baptist Hospital March 29, aged 60 of cerebral hemorrhage.

Joseph Nack, Kew Gardens, N. Y.; University and Bellevue Hospital Medical College, New York, 1911; served on the staff of the Harlem Hospital in New York; died in February, aged 57.

Andrew Nagy, West Los Angeles, Calif.; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1927; died in Santa Monica March 1, aged 46, of myocardial infarction and arteriosclerosis.

Lorenzo Bowen Phillips ⊕ Inwood, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; for many years affiliated with St. Joseph's Hospital in Far Rockaway; died March 31, aged 82, of coronary thrombosis.

Elbridge Worthington Pierce, Meriden, Conn.; University of the City of New York Medical Department, New York, 1885; president emeritus of the Meriden Hospital; died April 4, aged 84, of arteriosclerotic heart disease.

Joseph Pore ⊕ Ambridge, Pa.; Maryland Medical College, Baltimore, 1911; also a pharmacist; member of the American Heart Association; examining physician, Beaver County Local Board number 6, Selective Service System; medical examiner for the local school system; served on the staffs of St. Elizabeth Hospital in Youngstown, Ohio, and the Sewickley Valley (Pa.) Hospital; died in the Mercy Hospital, Pittsburgh, April 27, aged 64, of carcinoma of the lung.

George Thomas Pruitt, Meridian, Miss.; Memphis (Tenn.) Hospital Medical College, 1912; died March 20, aged 73, of coronary thrombosis.

George William Pugsley ⊕ Bayard, Neb.; John A. Creighton Medical College, Omaha, 1907; an officer in the medical corps of the U. S. Army during World War I; for many years councilor of the Twelfth District of the Nebraska State Medical Association; died March 23, aged 66, following an automobile accident.

Thomas Everette Romine, Charleston, W. Va.; University of Louisvile (Ky.) School of Medicine, 1911; died March 28, aged 60, of a skull fracture received when struck by an automobile.

Benjamin Clark Sawyer, Darlington, Pa.; Medical Department of the Western University of Pennsylvania, Pittsburgh, 1903; member of the board of education; died March 2, aged 70, of cardiovascular renal disease.

Richard Frederick Schiele ⊕ Glen Ellyn, Ill.; University of Illinois College of Medicine, Chicago, 1915; died April 9, aged 55.

George Winthrop Shoemaker, Syracuse, N. Y.; Syracuse University College of Medicine, 1897; one of the founders of the Onondaga General and People's hospitals; died March 29, aged 84, of myocarditis.

Shelby Epler Stinnette ⊕ St. Paul; the Hahnemann Medical College and Hospital, Chicago, 1913; affiliated with Midway, Mounds Park and Bethesda hospitals; died in Los Angeles March 27, aged 60, of coronary thrombosis and hypertension.

Fred Foster Stocking, Fargo, N. D.; Rush Medical College, Chicago, 1906; member of the American Medical Association and the Minnesota State Medical Association; fellow of the American College of Surgeons; served overseas during World War I; chief rating officer at the Veterans Hospital; died in April, aged 67.

Lieut. (jg) Ford P. Eshleman Jr.
(MC), U. S. N. R., 1919-1945

Capt. Ralph C. Berkelhamer
M. C., A. U. S., 1914-1944

Capt. John S. Doherty
M. C., A. U. S., 1914-1945

Henry Edward Stone, Boston; Tufts College Medical School, Boston, 1912; member of the American Medical Association; interned at the Lynn (Mass.) Hospital; died in Miami Beach, Fla., March 31, aged 57, of coronary thrombosis.

Frank Austin Teepell, Russell, N. Y.; University and Bellevue Hospital Medical College, New York, 1899; member of the American Medical Association; served as health officer; died recently aged 76.

William Scott Tinney Sr., Strasburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; member of the American Medical Association; served as coroner and physician for the board of health; died March 21, aged 67, of angina pectoris.

Karl Rand Tuttle, Haverhill, Mass.; Dartmouth Medical School, Hanover, N. H., 1888; died March 28, aged 86, of myocarditis and arteriosclerosis.

Pitt Abraham Wade, Canon City, Colo.; Barnes Medical College, St. Louis, in 1898 and 1899; died in National City, Calif., March 19, aged 77, of carcinoma of the prostate.

Jacob R. Wiggers, Grand Rapids, Mich.; Ohio State University College of Homeopathic Medicine, Columbus, 1917; member of the American Medical Association; died March 22, aged 61, of coronary thrombosis.

Thomas Marion Williams, Palo Alto, Calif.; Columbia University College of Physicians and Surgeons, New York, 1901; served in the U. S. Navy during World War I; formerly member of the city council; served as health officer of Palo Alto, medical adviser for Stanford University and special consultant in surgery at the Men's Student Health Service; for many years chairman of the Stanford Board of Athletic Control; affiliated with the Palo Alto Hospital; died March 26, aged 76, of cerebral hemorrhage.

KILLED IN ACTION

Ford Powell Eshleman Jr., Lakemills, Wis.; Northwestern University Medical School, Chicago, 1943; interned at the St. Luke's Hospital in Chicago, where he served a residency; began active duty in the medical corps of the U. S. Naval Reserve as a lieutenant (jg) on Oct. 10, 1944; began sea duty as ship's surgeon on the U. S. S. *Napa* which landed Fourth Division Marines on Iwo Jima on D-Day; aboard the U. S. S. *Braine* which was on patrol duty from Leyte to Okinawa and was attacked by enemy suicide planes off the east coast of Okinawa on May 27, 1945, aged 26; declared dead Oct. 5, 1945.

Ralph Carl Berkelhamer, Chicago; University of Illinois College of Medicine, Chicago, 1939; interned at the Englewood Hospital and the Cook County Hospital, where he served a residency; began active duty as a first lieutenant in the medical corps, Army of the United States, in May 1941; promoted to captain; prisoner on Bataan, where he survived the "Death March"; detachment commander at the hospital unit at Prison Camp Number 1 at Cabanatuan; awarded Silver Star for gallantry in action on Bataan and Bronze Star for excellent service while in prison camp; killed in action in the South China Sea Oct. 24, 1944, aged 30, when the ship on which he was being transported was sunk.

John Stephen Doherty, Lockport, N. Y.; University of Buffalo School of Medicine, 1941; diplomate of the National Board of Medical Examiners; interned at the Buffalo Hospital of the Sisters of Charity; began active duty as a first lieutenant in the medical corps, Army of the United States, on Aug. 18, 1942; promoted to captain; battalion surgeon of the 319th Glider Field Artillery; missing in action in Holland on Sept. 18, 1944; declared dead Sept. 19, 1945 by the War Department, aged 31.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 7, 1947.

Alleged Injury to Workers at an Atomic Research Station

It is alleged that workers in an atomic research center in England have developed symptoms arising from their employment. This claim is made in the daily press by the assistant general secretary of the Chemical Workers Union. Among the symptoms enumerated are lassitude, skin eruptions and impotence. Of 250 men working at the plant he states that 20 complain of impotence. This allegation is being investigated by the inspectors of the Ministry of Labor. At the same time a spokesman of the Ministry of Supply has stated that the only instance of disorder due to radioactivity in this and other plants is 1 case of dermatitis. Also Professor N. F. Mott, president of the Atomic Scientists Association, has stated that the methods of protection are so easily applied and so strictly enforced that it is inconceivable that workers could be affected. The impotence and sterility of which radar workers complained during the war were apparently not of occupational origin. It has to be remembered that, with a labor government in control of the country, workers have every opportunity to exploit real or alleged grievances.

Army Memorial to Help the Living

The Royal Army Medical Corps War Memorial Fund, for which $36,000 has been raised within the corps itself, has been commended to a wider public by Lieut. Gen. Sir Alexander Hood, director general of the army medical services. It is proposed to spend the fund mainly for the living rather than set up an expensive monument. This decision was taken by a large meeting representative of all ranks and all types of service. The fund will therefore be devoted first to the welfare of families of all ranks of the corps who fell in the war; also of all ranks who served in the war, and of their families, who may be in need through sickness or other misfortune. The intention is not to build up any large capital sum but to give substantial help where necessary. It is expected that the fund will be all distributed in some six or seven years.

At a press reception held at the headquarters of the corps Sir Alexander Hood made a threefold appeal for support of the fund: to his comrades of all ranks of the corps, to physicians in civil life, and to other arms and services and the general public. He felt that among the many thousands who passed, sick or wounded, through the medical units there were many who would like to take this opportunity of paying a practical tribute to those who looked after them in desert, jungle, prison camp, and every theater of war.

Artificial Insemination: Moral and Legal Objections

It is only recently that the question of artificial human insemination has attracted attention in this country. A conference on the subject has been held in London under the auspices of the Public Morality Council. The subject was discussed from every point of view by speakers representing the medical profession, the churches and the law. The problem was outlined by Dr. H. P. Newsholme, health officer of Birmingham. In the artificial insemination of a wife with her husband's semen he objected to obtaining the semen by masturbation as a lowering of human dignity. The only legitimate method was insemination from the vaginal pool after normal coitus. Mr. Kenneth Walker, a neurologist, who is an expert in male fertility, dealt with the use of donated semen. He had seen many more marriages saved rather than wrecked by this procedure. The theological aspect was dealt with by speakers representing the Roman Catholic Church, the Church of England and the Free Churches. Rev. J. C. Heenan, D.D., speaking for the Roman Catholic Church, condemned artificial birth prevention as "masturbation *à deux* and morally wrong. It was not only permissible but extremely desirable that marital intercourse, for some reason unfruitful, should be perfected by medical skill. This might take the form of preparing the vagina beforehand in order to overcome some obstacle or intervention after normal intercourse to assist the deposited seed toward its natural objective. But artificial fecundation properly so called was unlawful. Artificial insemination from a donor was revolting. For the Church of England Rev. G. L. Russell, a physician also, said that for insemination of a wife there was no practical alternative to masturbation and he did not believe that on moral grounds this should be prohibited. But, like all the clerical speakers, he regarded the use of donor's semen as morally objectionable.

A lawyer, Mr. J. P. Ashworth, saw great legal difficulties in the use of donor semen. If pregnancy followed and the mother registered the child as her husband's she would be guilty of perjury. Also the child would be illegitimate. Legacies to the child in the belief that it was legitimate would be invalidated. Then there was the danger that children of the same father, ignorant of the fact, might marry and so be guilty of incest.

The case for artificial insemination was stated by two women doctors. Dr. Mary Barton said that artificial insemination had been a portion of her daily practice for five years. About 10 per cent of marriages were sterile, and in about 60 per cent of these the male was affected. In about 3 per cent he was hopelessly sterile. There was no greater disruptive element in married life than a fertile woman living with a man who could never give her a child. There was no stronger urge in the developed woman than the bearing of children. Adoption of children was a solution in only a minority of cases. In arranging for a donor of semen it was insisted that the matter should remain a secret. Appalling damage might be done to the child by the discovery that the man reputed to be its father was actually not. In an experience of 300 donor cases the results had been satisfactory. The children were healthy and the woman and her husband had been happy.

Paraplegia Following Spinal Anesthesia: Damages for Negligence Against the Hospital Authorities

The disastrous effect of a spinal anesthetic has led to legal proceedings in which heavy damages for negligence were awarded against the hospital authorities but not against the medical staff responsible for the operation—a most unusual difference in such cases. A boy fractured his femur while playing football and was taken to a hospital at Portsmouth. In order to reduce the fracture a spinal injection of nupercaine was given in the ward, not in the operating room. Some days later meningitis was diagnosed, which was found to be due to infection with Pseudomonas aeruginosa. The result was that the boy became permanently paraplegic and could not retain his urine. In the action for damages three members of the medical staff of the hospital, including the orthopedic surgeon, were cited as defendants with the hospital authority. The judge found no evidence of any negligence on their part in the treatment of the fracture, the decision to administer a spinal anesthetic, the doing so in the ward instead of the operating room, or in treating the patient after the meningitis was diagnosed. He was satisfied that the skin was properly cleansed before the operation and that the operator had prepared himself in the approved way. The only remaining source of infection was the apparatus, for which the nursing staff was responsible. The infection could not have arisen without negligence on the part of the hospital service. He accordingly gave judgment in favor of the medical staff but against the hospital authorities. For the terrible disability of the boy, for which no money could compensate, he awarded $48,000 damages with costs. Notice of appeal against this judgment was lodged.

ANKARA

(From Our Regular Correspondent)

May 22, 1947.

Outbreak of Bubonic Plague

In March and April this year an outbreak of bubonic plague, of which Turkey had been free for a number of years, was reported from the southern frontiers of Urfa, where it was confined to three villages. The Ministry of Health immediately rushed by airplane the necessary equipment for preventive and curative measures to the infected areas. The frontiers were immediately closed and put under strict quarantine. The whole population of all southern provinces was vaccinated. All means of transportation were inspected and disinfected. Day and night almost two hundred persons (the director general of hygiene, 1 specialist, 1 bacteriologist, 1 district health officer, 68 health officers and physicians, 75 sanitary inspectors and 53 sanitary agents) were engaged in the work and two mobile hospitals and one mobile laboratory were used for the destruction of rats, mice, vermin and insects. Five and one-half tons of DDT, 201 tons of gasoline and 191 tons of benzine were employed. There have been 18 cases and 13 deaths and on April 9 the outbreak was considered closed. It has been revealed that the disease came in from Syria, where it is sometimes sporadic among desert nomads along the frontier and where no serious attempts had been made to prevent its spread. In the infected frontier villages only a few dead rats were found infected with Bacillus pestis.

The vigil along the frontier has not been abandoned, especially as recently 6 new cases of bubonic plague have been reported from the Syrian village of Varta. All arrivals from Syria must submit to close examination. The Central Institute of Health has provided the southern provinces with a generous supply of vaccine and serum. The outbreak has been reported in full detail to the Interim Commission of the World Health Organization at Geneva.

The Shortage of Trained Nurses

In 1942 the Turkish Red Crescent Society in Istanbul opened the first nursing school in Turkey. An eighth grade school certificate was required for admission to the competitive entrance examination. No fees were charged for tuition, board, maintenance and uniforms. The course was three years and a diploma was given. After graduation a five years compulsory service was required, and marriage during this period was not permitted. Noncompliance obligated the student to repay the expenses incurred in her training. At its inception the school had many applications and had from thirty to forty graduates each year. Most of the theoretical instruction was given by physicians and foreign trained nurses; for practical experience the students were sent to government and city hospitals. Graduates were given positions at governmental general hospitals. After several years of satisfactory work these nurses advanced to the position of head nurse.

With the advent of the republic, the reorganization of hospitals and the extension of health activities, it became increasingly evident that the number of graduates from this one school was wholly inadequate to meet the demand, especially as since the beginning of the last war the number of applications decreased and students began to leave after the probationary period. Less than a hundred students have graduated from the school so far. Bedside nursing at nearly all hospitals is still mostly done by practical nurses, who after a certain time and if their work has been satisfactory take an examination; having satisfied the board of examiners, they receive a certificate and an increase in pay, but they never attain the status of a trained nurse. In male wards and dermatologic clinics male nurses are employed. At present the place of the trained nurse in many general and maternity hospitals is taken by the trained midwife, of which there is no shortage.

There are at present four schools of nursing in Turkey. One, the Red Crescent School of nursing in Istanbul, with an enrolment of almost a hundred students and under the direction of two American trained nurses, and the two schools of nursing established last year in Istanbul by the Ministry of Health, one in affiliation with the Haydar Pasha Model Hospital, the other in affiliation with the Children's Hospital and an enrolment of almost a hundred students. In addition to free tuition, board, maintenance and uniforms, the students receive a monthly allowance of 30 liras a month. Theoretical instruction is given by the medical staff of the respective hospitals. The graduates are required to give five years of compulsory service at governmental hospitals for expenses incurred in their training. At the head of these schools are two Turkish trained nurses who had several years of postgraduate work and study in the United States. The funds for the administration of these schools come from the budget of the Ministry of Health. To procure trained nurses for army hospitals the Army School of Nursing, with an enrolment of almost a hundred students, was opened at the beginning of the war at the Gulhane Military Hospital in Ankara. The requirements for admission and the educational program are the same as in the other schools, but in addition to a small allowance the students receive officer's food rations, but the obligatory service is ten years instead of five. The Turkish Child Welfare Society of Ankara has a foundling home with three hundred inmates, to which is attached a school for the training of children's nurses. The course is two years and the graduates are given positions at the many branch homes the society has in all parts of the country.

Last September the cornerstone was laid at Ankara for a 200 bed Red Crescent hospital in affiliation with a second Red Crescent School of Nursing for 200 students. The plans for the hospital and school were drafted by the French architect Jean Walter, who has also prepared the plans for the medical center now under construction in Ankara. The Red Crescent Hospital and School are expected to be finished by the end of next year.

There are also plans for the systematic training of male nurses. The number of trained nurses in Turkey is at present 457; of practical nurses, 631.

The inadequate supply of trained nurses for hospital and public health work will probably continue to be a problem for some time. The emancipation of women must also be regarded as a contributing factor to the shortage. Most girls with a higher education now enter professions that were formerly not open to them, and the continually growing school population also demands more and more teachers for all grades. To attract more desirable candidates to the nursing profession a law was passed in 1945 according to which trained nurses in government service who had already attained civil servant status in 1926 were promoted to a higher salary class. Under the 1945 law they are eligible for a pension.

School of Hygiene Renews Courses

With twenty physicians from different provinces, the School of Hygiene at Ankara, which in 1941 discontinued courses on account of war conditions, has recently renewed courses. Health officers, physicians engaged in antimalarial work and physicians engaged in work at health centers are taking a four months theoretical and practical course in preventive medicine, epidemiology, vital statistics, general, social, industrial and rural hygiene, microbiology, malaria control work and sanitary engineering. The instructors are specialists from the Ministry of Health and Social Assistance and from Rockefeller fellows who did graduate work in preventive medicine in the United States. Field work is being done at the Etimesut Health Center, the Central Institute of Hygiene, the Ankara Model Hospital and the Malaria Prevention Center. For the small number of participants and the short duration of the course, postwar conditions and the continuing mobilization are responsible. It is hoped that a course of longer duration with more participants from remote provinces may be given next fall. The present course aims to prepare physicians so they will be able to direct the health centers that are to be opened in the near future.

BRAZIL

(From Our Regular Correspondent)

Rio de Janeiro, May 15, 1947.

Protection of the Liver and the Kidneys

Dr. Carlo Foa, professor at the University of Milan, Italy, has published his experimental studies performed at the Institute of Physiology of São Paulo, where he is a guest professor, on the protection of the liver and the kidneys by the synergic action of disintoxicating and lipotropic factors. The aim of Dr. Foa's studies was to compare the lipotropic power of choline with that of an enzymatic proteolysate of casein containing methionine, the antihepatosteatosis factors extracted from the pancreas, and the lipotropic and antinecrotic factors from an integral proteolysate of liver. He studied the separate action of each factor and also the simultaneous interaction of all of them.

As a fundamental alipotropic diet Dr. Foa used what he called diet A, containing casein 5 per cent, peanut flour 20 per cent, lard 20 per cent, starch 20 per cent, saccharose 28 per cent, agar 2 per cent, yeast 2 per cent, cod liver oil 2 per cent and Hawk and Oser's salt mixture 1 per cent. Rats fed on diet A showed a slow increase in weight and an extensive loss of hair, particularly of the head and sides. Several of these animals died on about the sixtieth day of the experiment from hepatic and renal disturbances caused by the diet. The postmortem examination of the liver disclosed steatosis with a variable distribution of fat. The most striking changes were present in the cells bordering the acinus near the periportal conjunctive tissue. Fat was seldom found in the central part of the lobuli but frequently in the intermediate zone. In some animals the most important changes were found around the central vein; in some others the fatty degeneration was mostly in the intermediate zone of the acinus, while its central part showed only necrobiotic lesions. A third group of animals presented fatty degeneration of the central part associated with severe necrosis of the intermediate zone. In many cases these diverse pictures were simultaneously found in different zones of the liver of the same animal, with fatty infiltration of the periphery of the acinus besides zones of necrosis and fatty degeneration of the central part. The infiltrated zones always presented the phenomenon of birefringence, the lipids, free or included in Kupffer's cells, being as a rule anisotropic. In some cases also the crystalline formations presented the anisotropic condition. Some rats were also fed on diets called B, C and D, the first containing 20 mg. of choline per day, the second containing the same amount of choline plus 20 mg. of inositol per day and the third one containing 20 mg. of choline and 20 mg. of the antihepatosteatosis factor extracted by the method proposed by Entenman, Montgomery and Chaikoff.

The average weight percentage of lipids of the liver of a lot of 10 rats fed on diet A was 22.65, while the same average for similar lots of animals fed on diets B, C and D was respectively only 9.70, 7.22 and 4.80. These results, in coincidence with the findings of microscopic examinations, demonstrated that the improvement caused by the lipotropic factors under study is more extensive when they act synergically, with great influence on the increase in weight, the growth of hair and the lipid content of the liver. Dr. Foa's conclusion is that choline, fed to rats showing definite liver steatosis caused by alipotropic diets without methionine, presents a high lipotropic power, which is increased by the synergic action of inositol. The action of these two factors is still greater when potentiated by the addition of the antihepatoesteatosis factor of Entenman, Montgomery and Chaikoff.

Chemistry of Normal Blood of Adults

Drs. Mario P. de Mesquita and Vera L. Ribeiro of the Fernandes Figueira Hospital of Rio de Janeiro have been studying for a number of years the blood chemistry of normal adults. Several of their studies have been reported in previous letters (hemoglobin, calcium, urea). The same authors have now published a report of their investigations on the normal content of uric acid in the blood, including 201 determinations; 152 in male persons and 49 in female persons. The variation of the value in males was minimum 1.6 mg., maximum 5.1 mg., mean 3.44 mg., standard deviation 0.61 mg.; in females minimum 1.6 mg., maximum 4.4 mg., mean 2.83 mg., standard deviation 0.65 mg. The mean value for the 152 males is 3.5 practically identical in all age groups.

The Antireticular Cytotoxic Serum

Drs. Eimar Povoa and Walter Guerreiro have reported the results of their first experimental work on the effects of the Bogomolets antireticular cytotoxic serum. After two years of hard work they succeeded in preparing the antireticular human serum, using spleen and bone marrow taken from a man free from infection and from cancer a few hours after his death. Using a technic similar to that of the preparation of rabbit serum against guinea pig and sheep serum against rabbit, they obtained a serum of low hemolytic power and with a high titer, which was employed in several human cases with partially good results. The present paper is a preliminary report.

Death of Dr. R. Leitão da Cunha

Dr. R. Leitão da Cunha, president emeritus of the Rio de Janeiro University, died recently at the age of 67. Graduating in 1902 from the Rio de Janeiro Medical School, Dr. Leitão da Cunha studied for some time in Europe. Returning to Brazil he was appointed professor of pathology at the Rio de Janeiro University and some time later was chosen to be president of the university. During a few years he was commissioner of health for the Federal District. He published several textbooks of medicine, among which was one on clinical pathology, which had a large use in Brazil. Two years ago he retired from active service, receiving the title of president emeritus of the university.

Brief Items

Dr. Arnaldo de Moraes, professor of clinical gynecology, University of Rio de Janeiro, has been elected corresponding member of the Société française de gynécologie. At the same time Dr. Moraes has been invited to be present at the eleventh French Congress of Gynecology, to be held this month at Chatel Guyon, France.

Dr. Amadeu Fialho, pathologist of the National Department of Health, has been appointed professor of pathology at the University of Rio de Janeiro, succeeding Dr. Paul Leitão da Cunha, who died a few weeks ago. Dr. Fialho, a leading specialist, is well known throughout the country. He is the author of many valuable papers.

Dr. C. Goulart de Andrade has been elected president of the Brazilian Association of Obstetrics and Gynecology. Dr. Andrade is assistant professor of obstetrics at the University of Rio de Janeiro.

Correspondence

THE THYROID GLAND

To the Editor —I had the good fortune many years ago to be able to point out the dominating role of the thyroid gland in the production of energy To the present day I am still surprised at the favorable reception which that research received and to find from time to time my name mentioned along with others to whom, in my opinion, science is indebted for the truly great discoveries in endocrinology Those men had a creative insight and imagination for the solution of their problems involving the discovery of new resources and methods, both chemical and surgical Nothing like this was requisite for my task The problem presented itself to me almost of its own accord Friedrich Mueller (*Deutsches Arch f klin Med* **51**:335, 1893) was the first, in 1892, to draw attention to the altered protein metabolism in hyperthyroidism Thereupon Leichtenstern and Murray (*Deutsche med Wchnschr*, 1894, No 50) independently in 1893 inferred from purely clinical observation that the loss of weight resulting in obese patients from thyroid feeding must be due in part to combustion of their accumulated fat and thus yield an increased energy production At that time I carried Mering and Zuntz respiration apparatus to the bedside of the patient There was nothing more to do than to examine the gaseous metabolism in hyperthyroidism and in myxedema (Magnus-Levy, Adolph *Berl klin Wchnschr*, 1895, No 30, *Ztschr f klin Med*, 1897, Nos 3/4), a task which was accomplished in less than three years

Fifty years have elapsed, and only now do I believe myself in a position to interpret the favorable reception accorded to these studies Their success may have depended on the great simplicity of the question as formulated, as well as on the method employed for its answer In addition it may be due to the circumstance that the problem was solved once and for all exclusively within the domain of human pathology

I desire to express my deep felt gratitude to my American friends, who chiefly because of it invited me to New Haven and provided me, a stranger in a strange land, with a sheltering roof for the pursuits of my old age

Adolph Magnus Levy, M D, New York

RHEUMATIC PNEUMONITIS

To the Editor —Dr G C Griffith in his article on "Rheumatic Fever" (The Journal, April 5, p 974) appears to consider that rheumatic pneumonitis was first described in 1927 This is not so, for I referred to it in my 'Manual of Children's Diseases" which was first published in 1905 One review severely criticized my statements, but since then I find that this type of pneumonia is now well recognized both in Great Britain and in America Let me quote my original reference to it "It may be also that pneumonia may occasionally be caused by the specific organism of rheumatism" I agree with Dr Griffith that subcutaneous nodules are not necessarily a grave prognostic sign I stated in my book that I had "on several occasions met with rheumatic nodules where the patient was not very seriously affected and made a rapid and good recovery" Again, I state that "appendicitis is undoubtedly a rheumatic affection in not a few cases" I consider it a mistake to give sodium bicarbonate along with sodium salicylate or acetylsalicylic acid As a rule too the doses given are inadequate In cases of acute rheumatism doses much beyond the average are well tolerated and yield better results

James Burnet, M D,
14, Cumin Place,
Edinburgh, 9, Scotland

CANCER TREATMENT BY AUTOVACCINATION

To the Editor —In the correspondence on "Cancer Treatment by Autovaccination" in The Journal, March 15 and May 10, no mention is made of the significant work by Thomas Lumsden between the years 1925 and 1936 The fundamental work is reviewed in the *American Journal of Cancer* **15**:563, 1931, the most recent paper in the series is in the same journal **32**:395, 1938

Since 1929, when Woglom published his somewhat overcritical review of tumor immunity (*Cancer Res* **4**:129, 1929) the scientific atmosphere has been hostile to the subject of tumor immunity, and possibly valuable experimental work has been rejected on insufficient evidence Lumsden's experiment on autovaccination in the treatment of transplanted tumors was apparently conclusive In one especially significant experiment he studied a large group of animals which had sarcomas implanted on both hind legs By injecting repeated small doses of formaldehyde into one tumor in each rat he was able to bring about a slow regression of the injected tumor In a very large percentage of the treated animals the uninjected tumor also regressed so that both tumors were ultimately entirely destroyed A comparison with control uninjected tumor bearing animals showed that the result was significantly due to the treatment employed In subsequent work Lumsden carried out a careful analysis of the mechanism of this phenomenon and showed that it involved an autoimmunization with the formation of cytotoxic antitumor antibodies

This important critical and imaginative research seems to have been overlooked by most investigators in the field

Arthur Shapiro, M D, Brooklyn

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in The Journal July 12, page 976

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners *Parts I and II* Various centers, Sept 15 17 *Part III* Durham Oct 21 23 Sec, Mr Everett S Elwood, 225 S 15th St, Philadelphia 2

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology Part II *Oral* Cleveland Oct 5 11 Sec, Dr P M Wood, 745 Fifth Ave, New York 22

American Board of Dermatology and Syphilology *Part I Oral* Chicago, Oct 24 26 Final date for filing application is Aug 1 *Part II Written* Various centers, Sept 15 Sec, Dr G M Lewis 66 E 66th St New York 21

American Board of Internal Medicine *Oral* Chicago, Oct 8 10 Asst Sec, Dr W A Werrell, 1 West Main St, Madison 3

American Board of Neurological Surgery *Oral* Chicago May or June Final date for filing application is Feb 1 Sec, Dr W. J German, 310 Cedar St, New Haven Conn

American Board of Obstetrics and Gynecology *Part I Written* Various Centers Feb 6 Final date for filing application is Nov 1 Sec, Dr Paul Titus, 1015 Highland Bldg, Pittsburgh 6

American Board of Ophthalmology Chicago, October 6 12 Sec, Dr S Judd Beach, 704 Congress St, Portland Me

American Board of Orthopaedic Surgery Part II Chicago, Jan 22 23 Final date for filing application is Sept 15 Sec, Col F M McKeever 1136 W Sixth St, Los Angeles 14

American Board of Otolaryngology Chicago Oct 7 11 Sec, Dr D M Lierle University Hospitals Iowa City, Ia

American Board of Pathology Chicago Oct 24 25 Final date for filing application is Sept 15 Sec Dr Robert A Moore Euclid Ave and Kingshighway, St Louis 10

American Board of Pediatrics Dallas Dec 5 7 Philadelphia, Jan 9 11 Sec, Dr Lee F Hill, 718 Royal Union Bldg Des Moines 9

American Board of Plastic Surgery Examinations are given in April and November of each year in the home town of applicants Applications should be sent to Sec, Dr Louis T Byars 508 N Grand Blvd, St Louis

American Board of Psychiatry and Neurology *Oral* New York, December Final date for filing application is Sept 15 Sec, Dr Francis J Braceland 102 110 Second Ave, S W Rochester, Minn

American Board of Radiology *Oral* Boston, Nov 26 30 Final date for filing application is Aug 1 Sec, Dr B R Kirklin, 102 110 Second Avenue, S W, Rochester, Minn

American Board of Urology Chicago, February Final date for filing application is Nov 1 Sec, Dr Harry Culver, 1409 Willow St, Minneapolis 4

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Governmental Hospital: Right of City Hospital to Remove Physician from Regular Staff.—The plaintiff filed suit to enjoin the defendant city from suspending him from the staff of a hospital which it operates. From an order denying an injunction, the plaintiff appealed to the Supreme Court of Florida.

Regulations governing the operation of the municipal hospital of Lakeland were approved by the city in 1943. Among other things, these regulations provided that "(A) The regular staff shall consist of those physicians, surgeons and dentists practicing in the city of Lakeland who have been, or may be, appointed by the Staff Executive Committee as hereinafter provided, and whose memberships have been approved by the City Commissioners." In relation to suspension of members of the staff, the regulations provided that "(19) Dismissal from Membership. Suspension. Members of the staff may be recommended for suspension or dismissal for unprofessional conduct or for the violation of the rules of the staff or of the hospital. Charges against staff members must be in writing to the president of the staff, who will refer the matter to the executive committee for investigation and recommendations, after which a vote of the staff shall be taken without discussion. A two thirds majority vote by secret ballot shall be necessary for the suspension or dismissal of the staff member. All staff members must be notified in writing of such contemplated action at least two weeks prior to the time of taking vote." The executive committee referred to in paragraph 19 consists of five members of the regular staff elected at the annual meeting each year. It serves for a period of one year, and to it is designated the duty to investigate any complaints that arise pertaining to the efficiency of the hospital or to irregularities of staff members. The plaintiff applied for membership on the regular staff in 1944, his application stating (in accordance with the approved form) "I agree to abide by the rules and regulations of the medical staff as approved by the city commission. I also agree to keep accurate and up to date records of patients under my care and complete their records within seventy-two hours after discharge of patient. I also agree to attend 75 per cent of the meetings of the staff." The permit issued to the plaintiff and approved by the city commission contained substantially the same provisions. On Nov. 1, 1945 the city manager issued the following directions: "To all staff members: Please be advised that beginning on the above date the supervisor of each floor has been instructed not to permit any patient to be taken to surgery unless the following is recorded on the patient's chart: 1. A complete physical examination. 2. Preoperative diagnosis. 3. Laboratory report. Also on all cases of therapeutic abortion there must be recorded two consultations with other physicians, one of which must be an obstetrician. This matter was brought up for discussion at a meeting of the executive committee of the medical staff held Oct. 31, 1945 and motions made, seconded and carried that the above ruling be enforced."

On Jan. 16, 1946 the superintendent of the hospital notified the plaintiff of a meeting of the executive committee on that day and urged the plaintiff to attend, which he did. The meeting was concerning the plaintiff and his noncompliance with the hospital regulations. The executive committee met again on February 12, and the plaintiff was invited to attend that meeting but he did not do so. On March 8 the committee held another meeting to which plaintiff was invited. He did not attend, stating that the committee could do as it pleased. On March 12 formal charges were given the plaintiff, and the executive committee granted him seventy-two hours in which to answer the charges and set March 15 as the day for further hearing. At the March 12 meeting, however, the committee made a formal report of charges but explained to the plaintiff that, although notice to the staff for a meeting on March 26 had been sent out, the executive committee would gladly hear any explanation which he wished to make. The plaintiff did not attend the meeting scheduled for March 15. On March 26, after the required two weeks notice, the staff voted to recommend to the city commissioners, and did recommend the next day, the indefinite suspension of the plaintiff from the staff for repeated unprofessional conduct. On April 4 the city commission met for the purpose of determining whether or not to suspend the plaintiff from the staff of the hospital. The plaintiff had been notified of this meeting and requested to attend. He was represented instead by his attorney, who read a letter which informed the city commission that the plaintiff had filed suit to secure such relief as it was possible for the court to allow under the law but asked for no action by the city commission. After the letter had been read, the attorneys were asked if they had any further statement to make. They had nothing more to say and left the meeting. The city commissioners then approved the recommendations of the staff and suspended the plaintiff.

The Supreme Court said that it was not incumbent on the city to maintain a hospital for the private practice of medicine and that a physician does not have a constitutional or statutory right to practice his profession in the city's hospital. It is well recognized, the court continued, that reasonable rules and regulations may be prescribed concerning the qualifications of physicians permitted to practice in public hospitals and follows that reasonable rules and regulations may also be imposed on physicians regulating their practice within the hospital. The management of the affairs of the city's hospital was in the exercise of a proprietary or corporate capacity as distinguished from one governmental in nature. Even though the hospital be a public hospital, plaintiff as a physician had no right (per se) to practice in the hospital, it being a privilege rather than a right. The court admitted that the city commission has no right to exercise its power in an unreasonable, arbitrary and capricious manner without being subject to judicial review but concluded that in the case presented such behavior was not made to appear. Accordingly the order of the trial court denying plaintiff's injunction was affirmed.—*Bryant v. City of Lakeland, 28 So. (2d) 106 (Fla., 1946).*

Medical Motion Pictures

FILM REVIEW

Manual Rotation in the Management of Occiput Posterior and Occiput Transverse Positions. Directed by H. J. Holloway, M.D., and E. S. Burge, M.D. Produced in 1943 by the Department of Obstetrics and Gynecology, Northwestern University Medical School and the Evanston Hospital. Photography by Mervin W. LaRue. 16 mm., color, silent, 1,100 feet (one reel). Showing time thirty-two minutes. Procurable by rental, $4, or by sale from Audio-Visual Medical Education Department, Northwestern University Medical School, 303 East Chicago Avenue, Chicago 11.

This is a teaching film intended for medical students and others interested in obstetric problems. Position diagnosis, manual rotation of occiput to an anterior position, forceps application and extraction for each of the posterior and transverse positions are explained and clearly illustrated. These technics are demonstrated in detailed steps, first on a "manikin" and then on a patient during an actual delivery. Many other details incidental to delivery are well illustrated, including constant observation of fetal heart tones, correlation of physical findings elicited by vaginal or rectal and abdominal examination, bladder emptying immediately prior to delivery, making of an episiotomy, and inspection and repair of the cervix after delivery.

The authors stress three requirements for successful accomplishment of the maneuver described: (1) accurate diagnosis of position, station and dilatation, (2) good muscular relaxation (they use drop ether anesthesia) and (3) a competent obstetrician. The photography is excellent, while the printed titles do not seem to furnish adequate explanatory remarks, this may have been intentional so that each instructor using this film for a class of students might supply his own narrative.

The film is recommended for showing to students or others interested in obstetric problems. It displays clearly many basic obstetric principles as well as the special maneuver described by the authors.

two weeks in the hospital prior to the thoracolumbar sympathectomy in order that the effects of rest and of the sodium amytal test on the diastolic pressure might be studied. No progression of retinal lesions was observed after sympathectomy in 82 patients with benign essential hypertension. Regression of the retinal hemorrhages, exudates and edema were observed after sympathectomy in 22 of 60 patients in whom hypertension was associated with moderate fundic lesions, but the arteriolar sclerosis remained unchanged in 48. Retinal angiospasm was relieved in 12 patients. Cases of benign essential hypertension showing normal eyegrounds or mild or moderate fundic lesions are suitable for sympathectomy if continued medical treatment is of no avail in alleviating the severe and persisting subjective symptoms. The group of patients who had so-called malignant (rapidly progressive) hypertension with extensive fundic lesions was too small to lead to any conclusion. The chief purpose of sympathectomy is the relief of subjective symptoms in patients with essential hypertension.

California Medicine, San Francisco

66:213-276 (April) 1947

Public Relations of a State Medical Society. J. W. Cline.—p. 213.
*Some Clinical Aspects of Rheumatic Fever in the Adult on the Pacific Coast. M. Eliaser Jr.—p. 217.
The Electrocardiogram in Diagnosis and Management of Rheumatic Fever.—p. 221.
*Differential Diagnosis of Adult Rheumatic Fever and Rheumatoid Arthritis. E. P. Engleman.—p. 227.
Public Measures for the Control of Rheumatic Fever in England. J. Parkinson.—p. 230.
Rheumatic Fever Control Program in California. H. Rosenblum. —p. 233.
Diagnosis and Treatment of Arteriovenous Aneurysm in a Naval Hospital. G. A. Stevens.—p. 235.
Fractional Spinal Anesthesia for Short Upper Abdominal Surgery. J. Brill and D. E. Stewart.—p. 238.
Poison Oak: New Antigens and Effect on Sensitized Patients. E. K. Stratton.—p. 240.
Newer Drugs for Allergic Disorders and Their Place in the Histamine Theory. M. M. Hartman.—p. 242.
Progress in Treatment of Carcinoma of the Prostate. A. J. Scholl. —p. 249.

Clinical Aspects of Rheumatic Fever in Adults.—Eliaser observed that hemolytic streptococcic infections, including scarlet fever, are common precursors of the acute disease in the adult and are followed by a two to three week period during which extremely strenuous physical activities do not produce symptoms. Clinically significant cardiac murmurs were audible in 45 per cent of the patients at the onset of the disease. Probable valvulitis was revealed in 15 per cent at the onset but was not detectable following convalescence. The involvement of joints among adult patients developing their initial attack in the Pacific Coast area is relatively mild compared to that described in children in several other parts of the United States. The duration of the active phase of the disease averaged sixty-three days.

Adult Rheumatic Fever and Rheumatoid Arthritis.—Engleman says that experience during the last war has stressed the difficulty of differentiating between adult rheumatic fever and rheumatoid arthritis. A comparative study was made of 252 soldiers with active rheumatic fever with carditis and 33 soldiers with acute, "atypical" rheumatoid arthritis. Carditis, when present, usually indicates rheumatic fever, although not necessarily so. The arthritis of atypical rheumatoid disease is apt to be progressive and not migratory, while in adult rheumatic fever it may be either progressive or migratory. The progression of the arthritis may be slower in rheumatoid disease than in rheumatic fever. Unlike rheumatic fever, the antecedent upper respiratory infection is infrequent in rheumatoid arthritis, and when it does occur the latent period is usually shorter. The ineffectiveness of salicylates characterizes rheumatoid arthritis. In rheumatic fever the objective joint improvement is dramatic with the proper administration of salicylates. Erythema, purpura and signs of pulmonary or pleural involvement should favor the diagnosis of rheumatic fever. The elevated sedimentation rate of rheumatoid arthritis continues for a prolonged period, while in most cases of rheumatic fever it is of comparatively short duration.

Canadian Journal of Public Health, Toronto

37:111-156 (March) 1947

Some Observations on the Prevalence of Rheumatic Heart Disease in Canada. J. D. Keith and L. A. Pequegnat.—p. 111.
Clinical Study of Neurotic Disorders in the Plant. J. A. Walters. —p. 118.
*Plague, Rocky Mountain Spotted Fever and Tularemia Surveys in Canada. F. A. Humphreys and A. G. Campbell.—p. 124.
Study of Diphtheria Antitoxin Response to Recall Doses of Specific Antigen. F. O. Wishart and Marie Rose Reid.—p. 131.
Standardization of Influenza Vaccine by Red Cell Agglutination and Antigenic Tests in Mice. R. Hare and Dorothy M. Mackenzie. —p. 141.

Plague, Rocky Mountain Spotted Fever and Tularemia in Canada.—Humphreys and Campbell present the results of an eight year survey on the plague, Rocky Mountain spotted fever, and tularemia in western Canada. Plague infection (*Pasteurella pestis*) is prevalent in ground squirrels in a large area of southeastern Alberta and in the adjoining territory of Saskatchewan. Six of 817 tissue pools and 32 of 939 flea pools submitted from 12,676 ground squirrels collected in Alberta, and 2 of 356 flea pools obtained from 7,448 ground squirrels in Saskatchewan proved positive. The infectious agent of Rocky Mountain spotted fever (*Rickettsia dermacentroxenus*) occurs in ticks in both British Columbia and Alberta. Evidence of the infection was found in 5 specimens out of a total of 72,227 ticks collected in British Columbia and in 10 out of 49,201 collected in Alberta. *Pasteurella tularensis* was encountered a total of thirty-eight times in the examination of specimens —ground squirrels, rabbits, mice, certain birds and ticks—submitted from various localities for evidence of plague and Rocky Mountain spotted fever.

Cincinnati Journal of Medicine

28:233-300 (April) 1947

Ambulatory Diabetic and the Family Doctor. E. P. Joslin.—p. 233.
*Lymphadenopathy in Association with Thiouracil Therapy. M. B. Macht and J. A. Herschfus.—p. 243.

Lymphadenopathy in Thiouracil Therapy.—Macht and Herschfus state that a survey of approximately 7,000 cases of thyrotoxicosis in which thiouracil has been employed indicates that toxic reactions occur in about 14 per cent. Lymphadenopathy as a complication was observed in relatively few cases. In a woman aged 67 lymphadenopathy had a dramatic onset eleven weeks after the treatment with thiouracil had begun. The lymph node enlargement was greater than any heretofore reported. The absence of any abnormal lymphocytes in the blood smears and the normal heterophile agglutination precluded the diagnosis of infectious mononucleosis. A malignant lymphoma was ruled out by the rapid progression of the nodes and the inflammatory nature of the reaction. Oral sepsis in the absence of agranulocytosis has been reported as a complication of thiouracil therapy, and this patient's buccal ulcers may have been caused in the same manner. The subsidence of the lymphadenopathy on withdrawal of thiouracil and the lack of other known etiologic factors suggest that the enlargement was a direct result of thiouracil.

Connecticut State Medical Journal, Hartford

11:161-234 (March) 1947

Diagnosis of Peripheral Arterial Diseases. H. Montgomery.—p. 163.
Tumor Clinics of Connecticut. E. J. Ottenheimer.—p. 167.
Progress in Treatment of Alcoholism. R. Raynolds.—p. 170.
Medical Program at Newington Veterans Hospital. L. G. Beardsley. —p. 173.
Rooming-In Plan for Mothers and Newborn Infants. Edith B. Jackson and H. Thoms.—p. 175.
Waterbury Hospital Clinical Pathologic Conference. J. O. Collins. —p. 177.
Psychosomatic Elements—When Foreman Is Pain in Neck. C. C. Burlingame.—p. 179.

11:235-318 (April) 1947

Operation of Public Law 725: Hospital Survey and Construction Act. H. E. Hilleboe.—p. 242.
Modern Influences in Medical Practice. T. P. Murdock.—p. 245.
Present Status of Streptomycin in Treatment of Tuberculosis. H. C. Hinshaw, W. H. Feldman and Marjorie Pyle.—p. 247.
Common Anal and Rectal Problems. J. G. Booe.—p. 250.
Clinical Use of Fluorescein. H. M. Kaplan and L. P. Hastings.—p. 254.
Soft Tissue Sarcoma—Ten Year Survival Followig Roentgen Ray Therapy. H. M. Nachman and P. D. Rosahn.—p. 257.
Voluntary Medical Prepayment Plans as They Apply to Rural Communities. J. R. McVay.—p. 265.

Endocrinology, Springfield, Ill.

40:123-230 (March) 1947

Pigmentation and Hair Growth in Black Rats as Modified by Chronic Administration of Thiourea, Phenyl Thiourea and Alpha-Naphthyl Thiourea. S. H. Dieke.—p. 123.
Differentiation of Antithyroid Action of Thiouracil, Thiourea and Para-Aminobenzoic Acid from Sulfonamides by Iodide Administration. C. G. Mackenzie.—p. 137.
Effect of Vagotomy and Thoracic Sympathectomy on Blood Glucose Changes in Dogs Given Alloxan. E. G Shipley and K. H. Beyer. —p. 154.
Inhibition of Thyroid Function in Beagle Puppies by Propylthiouracil Without Disturbance of Growth or Health. E. Mayer.—p. 165.
Relation of Hypophysis, Ovary, Placenta and Fetus to Development of Anemia During Last Half of Pregnancy in Rat. J. S. Newcomer. —p. 182.
Estrogenic Activity of Rabbit Whole Blood Determined by the Intravaginal Pellet Method. B. Krichesky.—p. 192.
Effect of Prostate and Seminal Vesicle on Production of Hyaluronidase by Rat Testes Homogenate. S. L. Leonard, P. L. Perlman and R. Kurzrok.—p. 199.
Effect of Gonadectomy and Administration of Testosterone Propionate on Growth of Antlers in Male and Female Deer. G. B. Wislocki, J. C. Aub and C. M. Waldo.—p. 202.

Georgia Medical Association Journal, Atlanta

36:105-154 (March) 1947

Peptic Ulcer: Review of Present Day Treatment. R. F. Norton.—p. 105.
Thiouracil in Treatment of Toxic Goiter, and Its Dangers. T. C. Davison and A. H. Letton.—p. 112.
Surgery on Elderly Patients. W. W. Baxley.—p. 116.
Subphrenic Abscess. J. W. Turner.—p. 119.
One Year's Operation of Expanded Typhus Control Program in Georgia. R. J. Boston.—p. 124.

36:155-184 (April) 1947

Topical Application of Thrombin and Plasma in Split Skin Grafts. C. E. Rushin.—p. 355.
Present Status of *Pilonidal* Cysts. M. C. Pruitt.—p. 153.
Importance of Early Diagnosis of Bladder Tumors. H. P. McDonald and A. J. Filip.—p. 162.
Spinal Anesthesia. J. M. Kellum.—p. 165.
Further Consideration of Malignant Lymphoma. J. Funke.—p. 168.
Surgery of Colon in Wartime: Experiences in Management of Reconstruction of Colon in Z. I. Hospitals. D. H. Poer.—p. 171.

Geriatrics, Minneapolis

2:75-136 (March-April) 1947

Precursors of Gastric Carcinoma. R. Schindler.—p. 75.
Anesthesia in the Aged. E. H. Watts.—p. 88.
Effect of Age on Leukocyte Count: Comparison of White Blood Cell Counts in Aged and Young Individuals, with Special Reference to Response to Infection. W. R. Gabbert, Lucile W. Hutaff and G. T. Harrell.—p. 96.
*Nutritional Aspects of Aging. H. A. Rafsky and B. Newman.—p. 101.
Cutaneous Hypersensitivity Reactions to Penicillin in the Aged. J. Farrington.—p. 105.
*Physical Fitness and Work Capacity of Older Men. E. Simonson. —p, 110.

Nutritional Aspects of Aging.—*Rafsky and Newman* say that there is evidence that in apparently normal aged persons there is a tendency to low blood levels and excretions of thiamine, low blood levels and high tolerance to ascorbic acid, a high incidence of porphyrinuria which disappears on the oral administration of nicotinic acid, and subnormal levels of carotene and vitamin A. Suggested as factors in explanation for these vitamin deficiencies have been inadequate intake of food, lack of vitamins in the diet, insufficient absorption of vitamins by the intestinal tract and failure of the organism to store vitamins. The authors describe investigations of these factors and stress that vitamin requirements of normal elderly people cannot be measured in terms of standards applicable to young adults or children. The diets of old people must be supplemented by vitamin therapy. Comparatively large amounts of vitamin supplement should be prescribed. Clinical experience has shown that at times it is essential to give these vitamins parenterally at the outset and then follow with vitamin therapy by mouth.

Physical Fitness and Work Capacity of Older Men.—Simonson thinks that if employment of older people does not more or less parallel the age shift, serious socioeconomic consequences will result. This raises the question whether increase of life expectancy is associated with a better maintenance of working capacity. If it is, an extension of the period of employment is feasible without important change in work. If, however, extension of the life expectancy is not paralleled by a similar age extension of working capacity, industrial jobs must be adapted to the working capacity of older men in order to maintain their employment. The second important question is whether the various physiologic, biochemical and psychologic functions deteriorate with age at the same rate. The third fundamental problem concerns the possibility of counteracting or delaying the decrease in working capacity with age. The author reviews the information available on these three fundamental problems and shows that much additional information is needed.

Journal of Aviation Medicine, St. Paul

18:109-216 (April) 1947

Rate of Nitrogen Elimination from Body Through Lungs. C. D. Stevens, H. W. Ryder, E. B. Ferris and M. Inatome.—p. 111.
*Electronic Warning Device for Oxygen Breathing Systems. C. A. Tobias and W. Siri.—p. 133.
Studies on Positive Pressure Respiration: Effect of Continuous Pressure Breathing on Arterial Blood Gases at High Altitude. A. L. Barach, M. Eckman, I. Eckman and others.—p. 139.
Arterial Oxygen Saturation at Altitude. Margaret Henson, D. E. Goldman, H. R. Catchpole and others.—p. 149.
Influence of Cold On Efficiency of Man. S. M. Horvath and A. Freedman.—p. 158.
Occurrence of Bends, Scotomata and Hemianopsia at Altitudes Below 20,000 Feet. C. S. Houston.—p. 165.
Evaluation of Certain Tests of Physical Fitness. H. M. Patt.—p. 169.
The Martinet. H. Porter.—p. 176.
Air Evacuation Activities. D. N. W. Grant.—p. 177.
Physical Principles Involved in Pilot Comfort and Efficiency. F. E. Randall and D. I. Patt.—p. 184.
Medical Care of Casualties in Long Distance Air Evacuation. Grace H. Stakeman.—p. 192.
Changes in Pressure in Peritoneal Cavity Produced by Sudden Deceleration of Experimental Animals. R. F. Rushmer.—p. 199.

Electronic Warning Device for Oxygen Breathing Systems.—Tobias and Siri describe an electronic warning system for use in aircraft equipped with oxygen demand or pressure breathing systems. The device functions on the respiratory rate and is designed to indicate at a central warning panel any interruption in the respiratory cycle greater than fifteen seconds for all oxygen stations. The principle of operation is a time delay circuit which actuates the warning lights on the indicator panel. Operation of the system has proved satisfactory in both laboratory and flight tests.

Journal of Clinical Investigation, Boston

26:145-353 (March) 1947. Partial Index

Residual Effects of Phosgene Poisonihg in Human Subjects. M. Galdston, J. A. Luetscher Jr., W. T. Longcope and N. L. Ballich.—p. 145.
Factors Influencing Urinary Excretion of Calcium: I. Normal Persons. Elizabeth L. Knapp.—p. 182.
Differential Spinal Block: Reactions of Sudomotor and Vasomotor Fibers. S. J. Sarnoff and Julia G. Arrowood.—p. 203.
Serum Potassium, Magnesium and Calcium Levels in Diabetic Acidosis. Helen E. Martin and Maxine Wertman.—p. 217.
Studies on Gangrene Following Cold Injury. F. A. Fuhrman and J. M. Crimson.—p. 229.
Effect of Creatine on Pain of Muscle Ischemia. F. B. Culp and F. W. Kinard.—p. 277.
Scleroma: Etiologic Study. M. Gjelhaug Levine, R. E. Hoyt and J. E. Peterson.—p. 281.
Studies on Virus from Patient with Fort Bragg Fever (Pretibial Fever). H. Tatlock.—p. 287.
Electrophoretic Changes in Serum Protein Pattern of a Patient with Typhus Fever. V. P. Dole, A. Yeomans and N. A. Tierney.—p. 298.
Observations on Men Performing a Standard Amount of Work in Low Ambient Temperatures. S. M. Horvath and H. Golden.—p. 311.
Circulatory Dynamics in Basal State Observed During Convalescence: Changes in Body Weight, Blood Volume and Venous Pressure. G. R. Meneely, A. Segaloff and E. B. Wells.—p. 320.
*Sulfadiazine Resistant Streptococcal Infections in a Civilian Community. R. D. Johnson and T. L. Hartman.—p. 325.
Studies on Relationship of Hepatitis Virus to Persistent Symptoms, Disability and Hepatic Disturbance ("Chronic Hepatitis Syndrome") Following Acute Infectious Hepatitis. J. R. Neefe, J. Stokes Jr., R. S. Garber and S. S. Gellis.—p. 329.
Blood Lactate Response During Moderate Exercise in Neurocirculatory Asthenia, Anxiety Neurosis or Effort Syndrome. M. E. Cohen, F. Consolazio and R. E. Johnson.—p. 339.
Water Storage and Movements of Body Fluids and Chlorides During Acute Liver Disease. D. H. Labby and C. L. Hoagland.—p. 343.

Sulfadiazine Resistant Streptococcic Infections.—Johnson and Hartman point out that during a program of mass chemoprophylaxis of streptococcic infections in the armed forces it was observed that the effectiveness of such a regimen was lost with the appearance of sulfonamide resistant strains of hemolytic streptococci. While these resistant strains spread in the U S Army and Navy, there had been no reports about epidemics in the civilian population due to sulfonamide resistant strains. Early in 1946 a small epidemic of scarlet fever occurred in Cooperstown, N. Y. Since the first 8 patients with scarlet fever were found to harbor type 19 hemolytic streptococci in their nasopharynxes, it was decided to determine whether they were sulfonamide resistant strains. All eight strains of hemolytic streptococci were found to be resistant to the action of sodium sulfadiazine in a concentration of 25 mg. per hundred cubic centimeters. From Feb 15 to May 1, 1946 streptococcic infections were moderately prevalent in Cooperstown. A table lists the type distribution and sulfadiazine resistance of group A hemolytic streptococci obtained from 100 patients with scarlet fever, pharyngitis, otitis media, wound infections, blood stream infections and pneumonia. The most common streptococcus was type 3, which was responsible for 28 cases of hemolytic streptococcic infections Type 19 was the cause of 24 cases of disease, with 23 of these strains being resistant to sodium sulfadiazine. None of these cases presented special therapeutic problems, nor were they clinically different from infections due to other types of hemolytic streptococci The appearance of increasing numbers of bacteria which are resistant to various chemotherapeutic agents formerly effective against them suggests the desirability of a careful bacteriologic diagnosis of infectious agents prior to treatment with specific antibacterial drugs

Journal of Infectious Diseases, Chicago

80:121-222 (March-April) 1947

Studies on Infection with Bacillus Anthracis V Isolation of Inflammatory Factor from Crude Extracts of Lesions of B Anthracis Infection and Its Biologic and Chemical Relationship to Glutamyl Polypeptide D W Watson, W J Cromartie, L L Bloom, R J Heckly, W J McGhee and N Weissman —p 121
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Reticuloendothelial Immune Serum (Reis) An Experimental Anemia in Bartonella Infected Rats Produced by Anti Blood Immune Serum C M Pomerat, E H Frieden and E Yeager —p 154
Studies on Hemoflagellates I A Semisolid Medium and Fluid Medium with Solid Base for Growing Various Species of Leishmania and Trypanosoma Cruzi Shih Lu Chang —p 164
Id Study of Growth Rates of Leishmania Donovani, L. Brasiliensis, L Tropica and Trypanosoma Cruzi in Culture Shih Lu Chang and W O Negherbon —p 172
Occurrence in Human Serum of Inhibitory Substance to Hyaluronidase Produced by Strain of Hemolytic Streptococcus G. J. Friou and H A Wenner —p 185.
Evaluation of Germicidal Agents by an Infection Prevention Toxicity Method E. H. Spaulding and A. Bondi Jr —p 194.
Inactivation of Murine Poliomyelitis Viruses by Heat. R B. Lawson and J L Melnick —p 201
Morphology of Cryptozoites and Metacryptozoites of Plasmodium Relictum and Relationship of These Stages to Parasitemia in Canaries and Pigeons F Coulston and C G Huff —p 209
Skin Tests in Schistosomiasis Mansoni with Antigen from Heterologous Worms (Pneumoneces, Planaria). J. T. Culbertson, H. M. Rose and J. Oliver Gonzalez —p 218

Journal of Nervous and Mental Disease, New York

105:343-448 (April) 1947

Effect of Oral Administration of Lactic Acid on Clinical Course of Depressive States H Lowenbach and M H Greenhill —p 343.
The Gerstmann Syndrome. Case Report and Review of Literature. D. I. Arbuse.—p. 359
Conditioned Psychogalvanic Response in States of Pathologic Anxiety. L Welch and J. Kubis —p 372
Experiences with Insulin and Electroshock Treatment in Army General Hospital. S Paster and S C. Holtzman —p 382
Psychiatric Ward Management of the Acute Schizophrenic Patient. K R Eissler —p 397.
Epidemic of Encephalitis in Concentration Camp Terezin During the Winter 1943 1944 A Kral —p 403
Self Induced Mediastinal Emphysema in a Psychotic Attempt to Commit Suicide by Means of the Valsalva Experiment M P. Rosenblum and J J. Silverman —p 414.
Report on 2 Cases of Psychosis with Oedipus Panic Treated Successfully with Electric Shock P S Kraus —p 420.

J. Neuropathology and Exper. Neurology, Baltimore

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Deposition of Iron in Paraventricular Areas of Human Brain in Hemochromatosis J. Cammermeyer —p 111.
Neurogliogenic Tumor of Diencephalon with Unusual Characteristics: Report of Case with Discussion of Classification. D. E Fletcher and W. H Bailey —p 128
Neoplastic Transformation of Subependymal Cell Plate in Floor of Fourth Ventricle (Subependymal Spongioblastoma) with Clinicopathologic Case Report H. Kuhlenbeck —p 139
Parenchymatous Cortical Cerebellar Atrophy Associated with Pick's Disease. A. R Buchanan, L. C. Overholt and K. T. Neubuerger. —p 152.
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Mechanism and Localization of Symptoms of Electroshock and Electronarcosis A van Harreveld —p 177
Temporal Lobotomy S. Obrador —p 185
Extirpation of Cortical Arm Area as Defined by Stimulation Under Conditions of Primary Facilitation (Macaca Mulatta). J. P. Murphy and R Arana —p 194.
Convulsant Effects of Penicillin on Cerebral Cortex W. J. Borkowski and F M Forster —p 201.

Journal of Neurosurgery, Springfield, Ill.

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Further Uses of Gelatin Foam in Neurosurgery E F Fincher —p 97.
*Resection of Greater Superficial Petrosal Nerve in Treatment of Unilateral Headache W J. Gardner, A Stowell and R Dutlinger. —p 105
*Dermatome Hypalgesia with Posterolateral Herniation of Lower Cervical Intervertebral Disk J. J Keegan —p 115
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Peripheral Nerve Injuries II Basic Data from Peripheral Nerve Registry Concerning 7,050 Nerve Sutures and 67 Nerve Grafts B Woodhall —p 146
Experimental Hydrocephalus F D Ingraham, E Alexander Jr. and D D Matson —p 164

Resection of Greater Superficial Petrosal Nerve in Unilateral Headache.—Gardner and his associates present evidence which indicates that periodic discharges of parasympathetic impulses over the greater superficial petrosal branch of the seventh nerve cause unilateral lacrimation, unilateral swelling and secretion of the nasal mucosa and unilateral head pain Since these were the predominating symptoms in 3 cases observed by the authors within a short time, a diagnosis of "greater superficial petrosal neuralgia" appeared justified In 1 of the 3 patients interruption of the nerve was resorted to in order to relieve the attacks After listing seven methods by which attempts have been made to relieve neuralgias of the head, the authors say that in reviewing their own cases they found that since 1938 the greater superficial petrosal nerve has been divided 31 times in 26 patients for the relief of unilateral head pain Most of these patients were benefited, some were not The complications of the operation such as temporary facial paralysis and keratitis are discussed The authors conclude that the operation provides a useful tool in the study and treatment of headache

Dermatome Hypalgesia with Herniation of Cervical Disk.—Keegan says that the clinical syndrome of nerve root compression by posterolateral herniation of a lower cervical intervertebral disk has been well presented in recent articles by a number of observers They have demonstrated that pain which extends from the lower cervical spine over the upper scapula and down the arm, often with associated numb sensation in some part of the hand, commonly is caused by lower cervical disk herniation In the past this syndrome has been variously diagnosed as brachial neuritis, radiculitis, fibrositis, myalgia or reflex pain, with focal infection, cervical arthritis, acromial bursitis, cervical rib, scalenus anticus, cardiac or gallbladder disease often suspected in the etiology. Now it is necessary to reevaluate this type of pain and recognize that it more often is due to nerve root compression by herniation of a lower cervical intervertebral disk. Keegan stresses that the clinical syndrome of lower cervical disk herniation should be recognized as a fairly common cause of pain extending from the lower part of the neck over the scapula and down the arm with numbness of one or more digits of the hand. Unilateral herniation of a cervical disk compresses only one nerve root and gives rise to detectable sensory and motor loss in the distribution of that root. Reduction of pain sensation or hypalgesia from single nerve root loss can be demonstrated by the technic of light pin scratch. Dermatome hypalgesia has been found in 51 clinical cases with history indicative of compression of a lower cervical nerve root by herniation of an intervertebral disk, presenting a new primary dermatome pattern for each of the fourth, fifth, sixth, seventh and eighth cervical nerve roots. Eight clinical cases of cervical rib or scalenus anticus muscle compression of the lower primary cord of the brachial plexus are presented to illustrate the distribution of the anterior primary division of the first thoracic and eighth cervical nerve roots, thus presenting a new diagnostic finding for this syndrome. A distinguishing symptom of lower cervical nerve root compression by herniation of an intervertebral disk is pain over the upper medial scapular region associated with neck movement. The presence of subjective and objective numbness or hypalgesia in an extremity is evidence of an organic lesion of a nerve to the extremity and cannot be classified as reflex pain. Nerve roots, determined by dermatome hypalgesia distributions, maintain a constant position; their location in relation to herniation of an intervertebral disk is more reliable than pathologic change in disks shown by x-ray examination or spinograms. A new dermatome chart of the human body is presented.

Journal of Nutrition, Philadelphia

33:361-490 (April) 1947

Some Effects of Methionine on the Utilization of Nitrogen in the Adult Dog. J. B. Allison, J. A. Anderson and R. D. Seeley.—p. 361.
Effect of Methionine on Urinary Nitrogen in Men at Normal and Low Levels of Protein Intake. R. M. Johnson, H. J. Deuel Jr., Margaret G. Morehouse and J. W. Mehl.—p. 371.
Amino Acids in Nitrogen Metabolism, with Particular Reference to Role of Methionine. Miriam Brush, Wanda Willman and Pearl P. Swanson.—p. 389.
Covitamin Studies: VI. Effect of Tocopherol Supplementation on Output of Vitamin A, Carotene and Fat by Dairy Cows. P. L. Harris, W. J. Swanson and K. C. D. Hickman.—p. 411.
Observations on Nutritional Value of Dialyzed Whey Solids. F. K. Daniel and E. H. Harvey.—p. 429.
Nitrogen Retention Studies on Rats, Dogs and Man: Effect of Adding Methionine to an Enzymic Casein Hydrolysate. W. M. Cox Jr., A. J. Mueller, R. Elman and others.—p. 437.
Conjoint Effects of Varied Intakes of Thiamine and Vitamin A on Rats. Marie Dye, Thelma Porter and Eunice Kelly.—p. 459.
*Value of Meat and Peas, Alone or in Combination, as Source of Protein for Growth. W. P. Lehrer Jr., Ella Woods and W. M. Beeson.—p. 469.
Tissue Reserves of Ascorbic Acid in Normal Adults on Three Levels of Intake. J. Estelle Haines, Ann M. Klosterman, Hazel M. Hauck and others.—p. 479.

Meat and Peas as Source of Protein for Growth.—Lehrer and his associates point out that in low cost diets or when meats are difficult to obtain a common dietary recommendation is an increased use of legumes to meet the protein requirement. Cooked pork, lamb, beef and peas and some combinations of peas and the meats were compared with whole egg as sources of protein for growth in young rats. Measured by growth rate and by efficiency the various meats, when fed at a 10 per cent protein level, were as good sources of protein for growth as were eggs. Cooked peas alone were a poor source of protein for growth. When peas were supplemented with 0.3 per cent dl-methionine, growth was increased until it was not significantly different from that obtained with whole egg protein, although it was not as efficient. At the levels of meat fed in combination with peas, growth was improved over that from peas alone, but even the meat and pea diets were inadequate, as evidenced by a characteristic liver involvement and early death of many of the test animals.

Maine Medical Association Journal, Portland

38:97-118 (May) 1947

Group Practice and Changing Professional Relations in the Hospital. F. T. Hill.—p. 97.
Delayed Obstetrical Labor. K. A. Laughlin.—p. 100.
*Maternal Pulmonary Embolism by Amniotic Fluid: Report of a Case. I. I. Goodof.—p. 101.

Maternal Pulmonary Embolism by Amniotic Fluid.—Goodof's patient, a woman aged 40, had had six previous normal deliveries. This time labor began seven hours after rupture of the membranes and terminated in spontaneous delivery of a dead baby, apparently strangled by the cord. Two hours following delivery the patient began to cough and wheeze. Cyanosis developed and was not relieved by oxygen, morphine and atropine. Respiration became more difficult, and the patient died. At necropsy the lungs were found to be wet. Numerous blocks of lung were fixed for sections. The pulmonary arterioles were massively distended with plugs of epithelial squamae, mucus, meconium and numerous polymorphonuclear leukocytes and lymphocytes. The appearance was identical with that seen in the sediment from amniotic fluid. Goodof thinks that embolism of amniotic fluid explains some cases of unexpected postpartum death. He cites reports by Steiner and Lushbaugh in 1941 of cases of pulmonary embolism by amniotic fluid.

Michigan State Medical Society Journal, Lansing

46:257-376 (March) 1947

Management of Strabismus. E. L. Cooper.—p. 305.
Hypertensive Heart Disease. F. D. Murphy.—p. 310.
Some Clinical Disturbances of Endocrine Glands. E. H. Rynearson.—p. 318.
Varicose Veins: Observations on Management and Mismanagement. J. A. Witter.—p. 321.
Local Tonsillectomy. H. T. E. Munson.—p. 325.
New Concepts of Causes of Asthma. F. M. Rackemann.—p. 328.

Missouri State Medical Assn. Journal, St. Louis

44:241-312 (April) 1947

Symposium on Fractures:
  Some Points in Organization of Rural Hospital Fracture Service. W. J. Stewart.—p. 257.
  Colles Fracture. N. Pickard.—p. 258.
  Fractures About Elbow Joint. D. L. Yancey.—p. 262.
  Fractures of Hip. W. R. Bohne.—p. 267.
  Treatment of Simple Fractures of Ankle. J. A. Key.—p. 270.

44:313-384 (May) 1947

Sarcoma of the Soft Parts. A. P. Stout.—p. 329.
Tumor Seminar. A. P. Stout.—p. 334.
Case of Microaerophilic Hemolytic Streptococcus Infection of a Pilonidal Dimple. R. Hackmeyer and E. L. Royer.—p. 344.

New England Journal of Medicine, Boston

236:457-492 (March 27) 1947

Meaning of the Patient to the Hospital. Ida M. Cannon.—p. 457.
Voluntary Hospital: How Can It Survive in Modern World? N. W. Faxon.—p. 460.
Possible Role of Community Hospital in Graduate Training in Surgery. G. Glenn.—p. 464.
Arthritis in Mediterranean Theater of Operations: Clinical Description of Infectious and Other Types of Arthritis. C. L. Short.—p. 468.
Diabetes Mellitus. E. P. Joslin.—p. 474.
Rheumatic Heart Disease, with Severe Mitral Stenosis: Cardiac Hypertrophy, Marked, Right Ventricle.—p. 481.
Glioblastoma Multiforme, Right Temporal Lobe.—p. 487.

236:493-522 (April 3) 1947

Problem of Social Medicine: Equilibrating the Distribution and Technology of Medical Care. W. Carlton.—p. 493.
Teaching Hospital's Service to the Public. A. M. Butler.—p. 497.
*Acute Yellow Atrophy Following Cinchophen Administration: Report of a Case. A. R. Lenzner, L. M. Lockie and C. F. Becker.—p. 500.
*Leukemia Cutis: Report of a Case, with Discussion of Treatment by the Use of Hormones. W. H. Robey and G. G. Russell.—p. 505.
Effects of Protein Deficiency on Pregnant Woman and Fetus and on Infant and Child. H. C. Stuart.—p. 507.
Benign Giant Cell Tumor of Coccyx and Sacrum.—p. 513.
Fibromyxosarcoma.—p. 515.

Acute Yellow Atrophy Following Cinchophen Administration.—Lenzner and his associates observed the development of acute yellow atrophy in a woman aged 59 the day after the ingestion of 2 Gm. of cinchophen; she died twelve days later. The gross and microscopic findings in the liver differed in some respects from those reported in cases of acute or fulminating hepatitis. Clinical and pathologic evidence of preexisting hepatic disease was absent. There was urinary suppression and early phosphorus retention. In addition to the usual picture of cholemic nephrosis the kidneys showed considerable amounts of calcium within the collecting tubules and their peripheral branchings. The authors point out that the first case of acute yellow atrophy allegedly due to cinchophen was reported about twenty years ago and, although similar cases have been recognized since that time, clinicians who use cinchophen with no observed untoward effects have minimized it as a hepatotoxic agent.

Leukemia Cutis.—In the case reported by Robey and Russell the intense skin involvement began early; the leonine appearance of the face and general leukemic infiltration of the skin led to the diagnosis of leukemia cutis—a rare manifestation, only 4 cases having been seen at the Boston City Hospital in twenty years. Two biopsies early in the disease showed the leukemic lymphocytic infiltration of the lesions. Treatment with navital (fish liver oils) and roentgen radiation having proved ineffective, it was decided to try estrogenic substance, first progynon B, with the addition of diethylstilbestrol later. Under this treatment the symptoms diminished, to increase again when the endocrine therapy was interrupted. The patient, a man aged 51, died suddenly with symptoms that suggested pulmonary embolus. Microscopic examination of the skin showed that the corium was extensively infiltrated by lymphocytes, a typical leukemia reaction. The remainder of the picture was consistent with lymphatic leukemia.

Public Health Reports, Washington, D. C.

62:413-448 (March 21) 1947

Simplified Appraisal of Dental Health Programs. J. W. Knutson, Cecelia Maday and W. A. Jordan.—p. 413.
Shadowed Replicas of Ground Sections Through Teeth. D. B. Scott and R. W. G. Wyckoff.—p. 422.
*Effect of Topically Applied Sodium Fluoride on Dental Caries Experience: IV. Report of Findings with Two, Four and Six Applications. J. W. Knutson, W. D. Armstrong and F. M. Feldman.—p. 425.

Effect of Topically Applied Sodium Fluoride on Dental Caries.—Knutson and his associates present data on the incidence of dental caries in the permanent teeth of three groups of Rochester, Minn., school children who received two, four and six applications respectively of 2 per cent sodium fluoride solution to the teeth in half the mouth. The incidence of initial caries in permanent teeth which were noncarious at the time of treatment was 9.3, 20.1 and 21.3 per cent less in teeth treated with two, four and six applications of fluoride solution respectively than in untreated teeth. The numbers of additional permanent tooth surfaces which became carious in teeth which were carious at the time of treatment were 16.2, 9.6 and 22.2 per cent less in fluoride treated carious teeth given two, four and six applications respectively than in untreated carious teeth.

62:449-484 (March 28) 1947

*Use of DDT to Control Murine Typhus Fever in San Antonio, Texas. D. E. Davis.—p. 449.
Plague: Survival of Infection in Fleas or Hibernating Ground Squirrels. F. M. Prince.—p. 463.

62:485-524 (April 4) 1947

Tuberculosis Mortality in the United States and in Each State: 1945. Elizabeth H. Pitney.—p. 487.
Adapter for Processing 70 mm. Roll Film in Open Tanks. A. J. Moen.—p. 512.

62:525-564 (April 11) 1947

Effects of DDT Mosquito Larviciding on Wildlife: Effects on Surface Organisms of Routine Hand Application of DDT Larvicides for Mosquito Control. C. M. Tarzwel.—p. 525.

DDT in Control of Murine Typhus.—Davis describes the results of an experimental program in San Antonio designed to reduce the number of cases of typhus by controlling the fleas on rats. Previous experiments had shown that the application of DDT to rat runs, burrows and harborages reduces the number of fleas found on the rats. It remained to determine whether the number of cases of typhus can be diminished by dusting DDT in buildings of cities or towns. In the experimental area 20 cases occurred between May 21, 1944 and April 4, 1945, when dusting began. After the program started, 4 cases occurred in treated premises and 10 cases occurred in premises not yet treated. The author concludes that the reduction of rat fleas by distribution of DDT is an additional method for the control of typhus.

Rocky Mountain Medical Journal, Denver

44:257-344 (April) 1947

Rehabilitation of the Deafened. N. Canfield.—p. 275.
Methods of Bringing and Holding Doctors in Rural Areas. F. A. Humphrey.—p. 283.
Carcinoma of Jejunum. K. C. Sawyer, C. W. Workman and F. B. Queen.—p. 287.

South Carolina Medical Assn. Journal, Florence

43:93-126 (April) 1947. Partial Index

Suggestion for Treatment of Chronic Sinus Disease. R. W. Hanckel.—p. 93.
William Henry Johnson, M.D.: A Memoir. J. A. Siegling.—p. 95.

Southern Medical Journal, Birmingham, Ala.

40:281-368 (April) 1947. Partial Index

Roentgen Examination of Sphenoidal Fissures. G. J. Baylin and H. D. Kerman.—p. 281.
Repairing Bone Defects in Cranium and Tibia. J. R. Green.—p. 289.
Technical Considerations in Adequate Transurethral Prostatic Resection. A. F. Turner Jr., L. M. Orr and J. C. Hayward.—p. 296.
Diverticulosis Coli with Coexisting Carcinoma of Rectosigmoid: Report of 2 Cases. B. G. Oren.—p. 304.
Fractures of Pelvis: Study of End Results. R. L. Anderson and H. M. Hills Jr.—p. 308.
Abortions Treated Conservatively: Twelve Year Study Covering 3,739 Cases. P. B. Russell Jr.—p. 314.
Some Effects of Posture on Patients During and After Operation. R. J. Forastiere.—p. 324.
*Present Evaluation of Response of Prostatic Cancer to Hormone Therapy. C. L. Deming.—p. 328.
Lack of Response to Insulin: Report of Patient Treated with 5,000 Units per Twenty-Four Hours. L. S. Smelo.—p. 333.
Acute Hepatitis in Children: Clinical Features and Laboratory Tests. C. H. Webb, S. G. Wolfe, R. T. Lucas and C. E. Anderson Jr. p. 340.
*Narcosynthesis in Civilian Practice. J. S. New and A. R. Kelly Jr.—p. 349.

Response of Prostatic Cancer to Hormone Therapy.—Deming applied hormone treatment by giving diethylstilbestrol orally, by castration or by a combination of castration and diethylstilbestrol. Synthetic estrogen therapy is of equal and perhaps of more value than castration. When the primary and distant metastatic lesions respond they do so regardless of the method of hormonal application. Dosage of estrogen should be determined on the basis of symptoms, rectal findings, x-ray evidence of osteoplastic activity and acid phosphatase readings. It is just as judicious to apply hormonal therapy early for prostatic cancer as it is to apply any other form of cancer therapy early for other forms of cancer. Synthetic estrogen treatment should be continued as long as the patient lives, whether castration has been done or not. The only known cure for cancer of the prostate is early radical prostatectomy, before it has become a biologic cancer and disseminated to periprostatic and distant organs.

Narcosynthesis.—In narcosynthesis barbiturates are administered intravenously as a means of facilitating psychotherapy. New and Kelly used this method in about 300 cases of acute war neuroses and a similar number of civilian cases with a wide range of disorders usually classed as psychoneurotic or psychosomatic. They gained the impression that narcosynthesis is of great value. Many patients obtain relief in a few days. With many others the period of treatment, although somewhat longer, is substantially shorter than if other methods are used. Narcosynthesis is one of the most practical and useful methods available in psychiatry, particularly with noninstitutionalized patients.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

55:209-262 (April) 1947

Preservation of the Upper Pelvic Floor and Bladder Support in Total Hysterectomy. G. E. Judd.—p. 209.
Report on Experience with Vaginal Hysterectomy. H. C. Stearns.—p. 220.
Present Status of Prostatic Resection. L. Smith and H. L. Chambers.—p. 236.
Rh Factor: Present Status and Clinical Importance. D. B. Rice.—p. 238.
Recent Advances in Neurosurgery. F. M. Anderson.—p. 245.

55:263-312 (May) 1947

Primary Ovarian Malignancy. J. V. Campbell and D. Singman.—p. 263.
Degenerating Tumors Complicating Pregnancy Myomectomy in the Prenatal Period. E. F. Anderson.—p. 273.
Psychoneurogenic Causes of Sterility and Their Treatment: Preliminary Remarks on Allergenic Sterility. J. J. Rommer.—p. 278.
Late Pregnancy Toxemia: Review of Experimental Findings. G. V. S. Smith and O. W. Smith.—p. 288.
Report of Primary Torsion of the Right Fallopian Tube. M. A. Howard.—p. 295.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

21:181-240 (Dec.) 1946

Height and Weight in Relation to Onset of Puberty in Boys. R. W. B. Ellis.—p. 181.
Observations on Growth of Children. G. M. Allen-Williams.—p. 190.
The Blood in Infancy. L. Findlay.—p. 195.
Biliary Obstruction Associated with Icterus Gravis Neonatorum. R. Lightwood and M. Bodian.—p. 209.
Etiology of Intermittent Esophageal Regurgitation and Hematemesis in Infants. W. G. Wyllie and C. Elaine Field.—p. 218.
Observations on Hemolytic Disease of Newborn. R. R. Gordon.—p. 225.
Treatment of Erythroblastosis Fetalis. I. A. B. Cathie.—p. 229.
Plasma Volume in Nephritis. P. MacArthur.—p. 235.

Australian J. Exper. Biol. and M. Science, Adelaide

24:253-336 (Dec.) 1946. Partial Index

*Passive Immunization by Intranasal Route in Experimental Pertussis. E. A. North.—p. 253.
Modified Salk Test for In Vitro Titration of Influenza Antibodies. S. G. Anderson, F. M. Burnet and Joyce D. Stone.—p. 269.
Inhibitory and Inactivating Action of Normal Ferret Serums Against an Influenza Virus Strain. F. M. Burnet and J. F. McCrea.—p. 277.
Nonspecific Serum Inhibition of Influenza Hemagglutination. J. F. McCrea.—p. 283.
Aspects of Immunology of Rh Factor. P. M. de Burgh, Ruth A. Sanger and R. J. Walsh.—p. 293.
Factors Influencing Virulence of Hemophilus Pertussis Phase I. D. F. Gray.—p. 301.
Accommodation of Nerve in Myasthenia Gravis and in Partial Curarization. E. L. Stratmann, R. D. Wright and G. Reid.—p. 313.

Intranasal Administration of Pertussis Antiserums in Mice.—According to North, mice have been shown to be suitable for the study of immunity in pertussis. Evans observed in 1944 a protective action of absorbed pertussis antiserum given to mice intranasally together with the infecting doses of Hemophilus pertussis. Evans concluded that both pertussis antibacterial serum and pertussis antitoxin are able to protect mice against infection by H. pertussis. North describes experiments carried out in an effort to confirm and extend Evans's observations. A high degree of protection against subsequent lung infection in mice is given by intranasal injection of pertussis antiserums. A lesser degree of protection is obtained when the serum is given after intranasal infection with H. pertussis. An absorbed human antibacterial serum protects mice better than a similarly absorbed antitoxic serum.

British Journal of Industrial Medicine, London

3:207-282 (Oct.) 1946

Toxicology of the Newer Metals. L. T. Fairhall.—p. 207.
Poisoning of Firemen by Irritant Fumes: Cadmium and Sulfonated Castor Oil. D. O. Shiels and I. Robertson.—p. 213.
Transfer of Heat Through Sun Helmets. P. S. H. Henry and W. H. Rees.—p. 225.
Experiment on Use of Psychologic Tests as Aid to Rehabilitation of Hospital Patients. Alice W. Heim and Audrey Rennison.—p. 237.
Acute Paranitraniline Poisoning. A. Anderson.—p. 243.
*Occupational Hazard of DDT Spraying. I. Gordon.—p. 245.
Oleogranuloma: Late Effects of Accidental Injection of Mineral Oil Under Pressure. B. Moore.—p. 250.
Calcium Necrosis of the Skin. A. G. Heppleston.—p. 253.

Occupational Hazard of DDT Spraying.—Gordon had an opportunity to investigate the toxic action of DDT in the field on a team of Africans who were occupied with spraying on five days of each week. Instructions were issued for personal protection against possible absorption by the wearing of gloves, gas capes and eye shields and for provision of an anti-drip can on the Mackenzie sprayer to catch the large amount of spray that ran back from the nozzle on to the operator's hands. However, no amount of ordering would convince these African civilians of the necessity for precautions. Blood examinations, regular weighings and skin inspections revealed that, although, these men were probably undernourished and took no precautions against skin absorption, no signs or symptoms of DDT poisoning were found. Slight increases in the leukocyte count were noted. When DDT was used in kerosene, rashes were common when sprayers first started on the work. After some months, however, they became desensitized. By means of a patch test it was shown that the irritation is primarily due to the kerosene and made considerably worse by the DDT dissolved in it. DDT alone is innocuous. A plea is made for the discontinuance of kerosene as a solvent for DDT.

British Medical Journal, London

1:437-476 (April 5) 1947

Pethidine in Labor: Results in 500 Cases. Josephine Barnes.—p. 437.
Outbreak of Staphylococcal Food Poisoning. J. G. Oddy and H. W. Clegg.—p. 442.
d-Tubocurarine in Cesarean Section. T. C. Gray.—p. 444.
*Use of d-Tubocurarine Chloride and Thiopentone in Electroconvulsion Therapy. J. A. Hobson and F. Prescott.—p. 445.
Use of Curare in "Poor Risk" Patients. G. Ostlere.—p. 448.
d-Tubocurarine Chloride in Electroconvulsion Therapy. A. Gillis and D. D. Webster.—p. 451.

d-Tubocurarine Chloride and Thiopentone in Electric Convulsion Therapy.—Hobson and Prescott describe the use of d-tubocurarine chloride and thiopentone for modifying electrical convulsions in 50 patients undergoing treatment for psychiatric illness. In all, 300 treatments were given. These drugs do not significantly affect the electrical convulsion threshold. The advantages claimed for the method are that the traumatic complications of electric convulsion therapy are avoided, there is no serious rise in blood pressure, it enables electric convulsion therapy to be given to certain patients in whom otherwise convulsions would be contraindicated, postconvulsive excitement is minimized, the procedure can be carried out single handed if desired and the unpleasantness of electric convulsion therapy for the patient is almost entirely eliminated.

1:477-516 (April 12) 1947

Study of Surgical Anatomy of Vagina, with Special Reference to Vaginal Operations. W. Shaw.—p. 477.
*Treatment of Reiter's Syndrome by Gold Salts. R. R. Willcox, G. M. Findlay and A. Henderson-Begg.—p. 483.
Scrub Typhus Vaccine: Effect on 16 Cases Incubating the Disease. W. T. Walker.—p. 484.
Prognosis of Primary Pleurisy with Effusion. B. C. Thompson.—p. 487.
Case of Bilateral Simultaneous Spontaneous Pneumothorax. G. M. Komrower.—p. 488.

Gold Salts in Reiter's Syndrome.—Willcox and his associates point out that in experimental animals certain strains of pleuropneumonia-like organisms give rise to arthritis and conjunctivitis. An attempt was made to isolate pleuropneumonia-like organisms from the conjunctiva and joint fluids of patients with Reiter's disease. Two patients with arthritis and urethritis, one of them also with conjunctivitis, have been investigated for the presence of pleuropneumonia-like organisms by culture of the joint fluid and blood on suitable mediums rich in animal protein and by inoculation of blood and joint fluid into mice. Apart from the production of arthritis in a single mouse by the injection of joint fluid from one patient, an investigation of 2 patients with Reiter's syndrome was negative for the presence of pleuropneumonia-like organisms. Since pleuropneumonia-like organisms have shown sensitivity to gold salts, injection of such salts was resorted to in 2 patients with Reiter's syndrome. This treatment was curative, while penicillin and sulfonamides were of little value.

J. of Neurol., Neurosurg. and Psychiatry, London

9:81-112 (July) 1946

Chronic Progressive Ophthalmoplegia of Myopathic Origin. P. H. Sandifer.—p. 81.
*Paget's Disease of Atlas and Axis. N. Whalley.—p. 84.
*Effects of Vitamin and Hormone Treatment on Senile Patients. P. E. Vernon and M. McKinlay.—p. 87.
Nerve Biopsy. W. Holmes and R. B. Zachary.—p. 93.
Pattern of Olfactory Innervation. W. E. Le Gros Clark and R. T. T. Warwick.—p. 101.

Paget's Disease of Atlas and Axis.—Whalley says that, although Paget's disease commonly affects the vertebral column, it is rare for it to result in interference with spinal cord function. In an extensive search of the literature on the subject of spinal cord complications secondary to osteitis deformans the author has been unable to find any instance of the disease affecting the atlas and axis vertebrae and causing spinal cord compression. In the case described here, not only had the disease process produced cord compression, but it had also resulted in spontaneous forward dislocation of the head on the cervical spine. The patient was a man aged 66. The x-ray illustrates massive new bone formation, fusion of the vertebrae, kyphosis and dislocation of the head. Narrowing of the spinal canal can also be seen. The postmortem specimen shows encroachment of the bony overgrowth on the spinal canal and its contents.

Effects of Vitamin and Hormone Treatment on Senile Patients.—Vernon and McKinlay treated small groups of senile patients with vitamins B and C and with androgenous hormones. The patients, together with similar numbers of untreated controls, were tested individually with mental and psychomotor tests before treatment and during each phase of treatment. No evidence was obtained of any general improvement in intellectual efficiency or psychomotor capacities as a result of treatment. The only positive psychologic findings of this investigation were that moderate doses of vitamins may improve general mental ability among severe cases of senility, and may produce some increase in fluency and decrease in perseveration among light and moderate cases. Even these changes, amounting to about 10 per cent, are so much on the borderline of statistical significance that they cannot be regarded as proved without further evidence.

Lancet, London

1:471-506 (April 12) 1947

*Outbreak of Virus Encephalomeningitis in Northwest Middlesex. G. H. Gennings.—p. 471.
Continuous Injection of Penicillin: Secunderabad Apparatus. J. H. Bowie and M. D. Borcar.—p. 477.
Mammary Cysts: Their Treatment. F. C. Pybus.—p. 480.
*Scrub Typhus Vaccine: Field Trial in Southeast Asia. W. I. Card and J. M. Walker.—p. 481.
Epilepsy and Hysteria. D. N. Parfitt.—p. 483.
Modification of Human Red Cells by Virus Action: Agglutination by "Incomplete" Rh Antibody. C. M. Chu and R. R. A. Coombs.—p. 484.

Outbreak of Virus Encephalomeningitis.—An outbreak of neurotropic virus infections in which meningitic and encephalitic symptoms were prominent was observed between March and November 1946. In this outbreak 22 patients with meningitis or encephalitis and 13 with less clear signs and symptoms were admitted to the hospital. The cases occurred chiefly during the summer. In no case was it possible to trace a direct contact with another case in the family, school or work place. One peculiar coincidence was the admission of case 11 on the same day as a classmate who had clinical poliomyelitis. When the cases of encephalomeningitis were seen, an outbreak of poliomyelitis existed in the region and Brodie's statement that half the poliomyelitis cases in an epidemic are nonparalytic might suggest that the cases seen by the author were atypical forms of poliomyelitis. Most of the cases involved children or young adults. The illness usually began suddenly with fever and frontal headache. Though meningitic manifestations (headache, vomiting, photophobia and stiffness of the neck) were almost constant at this stage, they were sometimes not well defined. After admission the course of the illness was variable, but in most cases there was fever for about a week, and in many cases it was of low grade. Paul-Bunnell and Widal tests, done in some cases, were negative. Treatment appeared to have little effect. The weight of evidence is against these cases being due to an injection by the virus of Armstrong and Lillie. Whether one or more viruses were responsible for the infections also remains to be shown. The well known variations in the cerebrospinal fluid findings and the clinical picture, even in a recognized infection such as Armstrong's virus, and the number of neurotropic viruses as yet not isolated, make exact diagnoses difficult.

Scrub Typhus Vaccine.—Card and Walker say that with the realization in 1943 that scrub typhus would form a major medical problem in the war in Southeast Asia, work was started on the production of a vaccine. They describe a field trial with scrub typhus vaccine. Between July 1945 and February 1946 sufficient vaccine was distributed for the vaccination of over 60,000 men, though only 10,000 of these were inoculated on a controlled basis. As recommended by the Medical Research Council, 1 cc. of vaccine was given on three occasions at weekly intervals. No reactions were observed. There were 9 cases of scrub typhus in fully protected persons and 24 in partially protected persons. It is impossible on the limited evidence to say whether or not the vaccine has any effect on the mortality or incidence of the disease. The available evidence suggests that the vaccine has no noticeable effect on the clinical course or serologic reactions of scrub typhus.

Bruxelles-Médical, Brussels

27:555-620 (March 16) 1947

*Mortality Rate of Appendicitis in Switzerland. S. Cuendet.—p. 565.
Contribution to Study of Fibromyoma of Cervix of Uterus. Bourg and Hannes.—p. 577.

Appendicitis in Switzerland.—The operative mortality rate of appendicitis in Switzerland was reduced progressively from 21 per cent at the end of the last century to 6 per cent in 1912, to 3 per cent in 1937 and to 1 per cent and even to less at present. The absolute mortality showed a pronounced increase up to 1937 in spite of the percental reduction of the operative mortality. Since that date up to 1944 the mortality has been reduced regularly. From 530 fatalities in 1937 it was reduced to 315 in 1944 in spite of the unfavorable conditions due to the mobilization of the army. According to Cuendet early diagnosis and early surgical intervention and better information passed on to the public may be responsible for this reduction, which preceded the introduction of the sulfonamides. In 1945 there was a mild increase of the mortality in spite of the use of penicillin, which became general in Switzerland in the spring of 1945. Three hundred persons are still dying from appendicitis in Switzerland yearly, with the majority of patients between the ages of 5 and 15; there is a progressive reduction of mortality in the next age groups and again an increase in the mortality of patients between the ages of 55 and 70 years. A critical study of 68 fatal cases from civilian life and from the federal military insurance revealed that in 51 death resulted from generalized peritonitis or from intestinal occlusion and in 15 per cent of the military cases from pulmonary embolism. In more than 50 per cent of the fatal cases operation was performed too late through their own fault or the fault of the family or because of difficult diagnosis. Obligatory preventive appendectomy in childhood does not seem feasible for the country as a whole, but individual preventive appendectomy is suggested, although one should keep in mind that it is not always without a risk.

Paris Médical

1:97-112 (March 1) 1947

Diseases of Respiratory Apparatus in 1947. M. Bariéty and R. Lesobre.—p. 97.
Alveolar Exudation and Bronchial Excretion. P. Ameuille.—p. 103.
Incidents and Accidents of Bronchoscopy in Patients with Pulmonary Tuberculosis. C. Gernez-Rieux, A. Breton and J. Mereau.—p. 105.
*Treatment of Dyspnea in Asthmatic Patients with Theophylline. J. Turiaf and M. Bourel.—p. 109.

Theophylline in Asthma.—Turiaf and Bourel administered theophylline and theophylline ethylenediamine to 181 patients with asthma. One intravenous injection of 0.25 Gm. of theophylline in the morning and one in the evening, and one 0.35 Gm. theophylline suppository at noon brought radical relief of dyspnea in five to ten minutes after the injection and in fifteen to twenty minutes after the introduction of the suppository. This treatment was effective in 150 patients, 108 of whom had isolated paroxysmal attacks, while 38 had continuous dyspnea and 4 had effort dyspnea. Theophylline was effective in cases of severe asthma of ten years' duration in which pituitary-epinephrine preparations as well as procaine hydrochloride were ineffective. Untoward reactions did not develop. Thirty-one patients were failures, 25 of whom had continuous dyspnea and 6 had effort dyspnea. It is suggested that the highly satisfactory results obtained with theophylline may be partly due to its effect on the vasomotor apparatus of the epithelial lining of the bronchi.

Minerva Medica, Naples

38:201-220 (Feb. 17) 1947. Partial Index

*Heart and Hypovitaminosis B_1 in Pregnancy. F. De Matteis and E. Robecchi.—p. 201.

Heart and Hypovitaminosis B_1 in Pregnancy.—Twenty multiparous women with cardiac symptoms during the third and fifth months of pregnancy were given daily intramuscular or intravenous injections of from 20 to 30 mg. of vitamin B_1. Control of the subjective symptoms, return to normal pulse and disappearance of headache, edema and stenocardiac crises was obtained in the 13 patients who followed the treatment for one or two weeks. The failure in 7 patients was due to lack of cooperation and insufficient therapy.

Arch. Ital. d. Mal. d. App. Diger., Bologna

13:3-65 (Jan.) 1947. Partial Index

•Primary Isolated Lymphogranulomatosis of Stomach. F. Farneti.—p. 3.

Lymphogranulomatosis of Stomach.—A man aged 38 had symptoms of gastric ulcer. He was in poor nutritional condition when the first vomiting of blood occurred. Four days later the second vomiting took place. It was profuse and caused his death. Necropsy showed fibrous fat infiltration of the stomach (especially the antral region), zones of necrosis and enlarged peripancreatic and perigastric lymph glands. The histologic diagnosis was lymphogranuloma.

Prensa Médica Mexicana, Mexico, D. F.

12:1-26 (Jan. 31) 1947. Partial Index

•Infantile Poor Nutrition in Mexico. F. de P. Miranda.—p. 1.

Undernourishment of Infants in Mexico.—Undernourishment of infants and children of poor families dates back to remote epochs before the discovery of America. The most acute period is that of weaning, which is followed by chronic undernourishment up to the age of 6 years The mortality from infancy to the age of 6 years is high. Clinically there is a lack of proteins as the causal factor of disorders of somatic development, disorders of the type of fatty liver, diarrhea, a tendency to frequent infections, dehydration, edema and sometimes pellagra, ariboflavinosis and xerosis.

Revista de la Asoc. Méd. Argentina, Buenos Aires

60:677-724 (Aug. 15) 1946. Partial Index

•Subacute Lymphoid Leukemia in Chronic Pulmonary Tuberculosis. I. M. Hernández and I. Smirnoff.—p. 677.

Lymphoid Leukemia in Pulmonary Tuberculosis.—The subject of this report, a man aged 30, presents the first instance of subacute lymphoid leukemia occurring in chronic pulmonary tuberculosis and the third instance of leukemia seen in the Hospital Tornú of Buenos Aires. The pulmonary tuberculosis was latent. The pathogenesis of lymphoid leukemia is not definite. In the reported case the clinical form was that of subacute lymphoid leukosis. Blood transfusions, sedatives and vitamins did not modify the course of the disease. Intercurrent bronchopneumopleuropathy was the immediate cause of death.

Revista Española de Tuberculosis, Madrid

16:7-90 (Jan.) 1947

•Bronchiectasis in Children. S. A. Ayerbe Valles.—p. 11.
Myocardial Infarct in Adolescents. A. Crespo Alvarez and J. Márquez Blasco.—p. 39.

Bronchiectasis in Children.—Ayerbe Valles reports 13 cases of bronchiectasis in children between the ages of 7 and 12 years. Pleuritis, tuberculous adenopathies and tuberculous infiltration are the etiologic factors which bring about partial bronchial obstruction and local retention of secretions. The effect of atelectasis is indirect. The role of a congenital factor is possible. Blood spitting is an early symptom. Typical clinical symptoms manifest themselves in advanced periods. When a definite diagnosis cannot be made from a roentgenogram, x-ray examination after injection of iodized oil is indicated.

Bibliotek for Laeger, Copenhagen

138:261-272 (Dec.) 1946

•Factors Affecting Mortality in Operation for Gastric or Duodenal Ulcer Without Acute Complications. J. L. Hansen, A. Boehm, H. B. Rasmussen and E. Ratjen.—p. 261.

Mortality in Operations for Gastric or Duodenal Ulcer.—Analysis of 531 cases in which operation was performed for ulcer without acute complications in three districts in Denmark during the last ten years, Hansen and his associates state, shows that of the factors which affect the mortality and can be influenced preoperatively the hemoglobin percentage, weight and stomach retention are especially important. If stomach retention cannot be overcome the prognosis is less favorable; gastroenterostomy may have to be done instead of resection. In underweight patients resection seems to be performed too often in proportion to gastroenterostomy. The factors which depend on how early and how often operation is done are of more basic importance in the question of mortality. The present work is an argument for earlier and more frequent operation. If there are repeated periods of increased activity, perhaps bleeding or perforation, if loss of weight and anemia occur, or achylia and retention, if the ulcer by x-ray manifests itself more clearly, and if rational medical treatment cannot cause the symptoms definitely to disappear, operation is advised. Before operation all means must be used to bring weight and hemoglobin count to normal and keep them so for a longer time, so that eventual general cell injuries can be repaired before the intervention. If these lines of guidance were followed a far larger number of ulcer patients would be operated on, considerably more milder cases and relatively fewer grave cases would be included, and a decline in the absolute number of grave ulcer cases would gradually follow.

Nordisk Medicin, Gothenburg

33:283-350 (Jan. 31) 1947. Partial Index

Treatment of Ulcer Disease. T. Andersen.—p. 283.

Hospitalstidende

•Spinal Anesthesia with Nupercaine According to Sebrecht. N. Fiil.—p. 291.
Encephalitis Following Measles. Emma Vestergaard.—p. 296.
Congenital Megacolon. H. Moltrup Poulsen.—p. 299.

Finska Läkaresällskapets Handlingar

Narcosis in Operations for Goiter. T. Sandelin.—p. 307.
Postoperative Parotitis. R. Jäps.—p. 309.
Polycythemia, Anemia and Calcified Spleen in Same Patient. J. Forssell.—p. 313.

Hygiea

•One Hundred Positive Hypoxemia Tests. G. Biörck and R. Pannier.—p. 315.
Vitamin C in Infancy. Irma Vitolin and L. Hesselvik.—p. 323.

Spinal Anesthesia with Nupercaine.—Fiil says that this form of spinal anesthesia gives definite effect for a longer period than do other forms and is therefore recommended for supraumbilical laparotomies. Of the 916 cases reported, 639 were supraumbilical and 277 infraumbilical. There were no anesthetic deaths. Collapse occurred in 18 patients but they all recovered. Jaundiced patients seem to be more liable to collapse after high spinal anesthesia. Injection of scophedal does not affect the occurrence of collapse but apparently aggravates its course. Collapse is independent of the amount of nupercaine used. Prophylactic injection of ephedrine is of no value. Two patients were refractory to the anesthetic. In 18 cases the anesthesia had to be supplemented with inhalation narcosis; 12 of these cases, also 12 of the collapse cases are ascribed to insufficient experience on the part of the anesthetist. The anesthetist should become apprehensive when the patient coughs, sneezes or is nauseated, as increased intra-abdominal pressure will cause the anesthesia to rise faster than intended.

Hypoxemia Tests.—The test was made on 666 patients, 378 men and 288 women. Of the 100 positive tests 40 were in men and 60 in women. Seventeen were in patients without suspected coronary disease, 53 in patients with suspected and 30 in patients with probable or certain coronary disease. Study of the positive tests shows a relative preponderance of women and a relative preponderance of patients with hypertension, especially in patients without suspected coronary disease. Positive tests in both men and women were more common in persons with heart of normal size than in persons with enlarged heart. In persons with enlarged heart an increased venous stasis in the coronary circulation may perhaps favor the development of collaterals. Seventeen patients, 16 of whom were women, are designated as neuropathic. While the hypoxemia is still considered a test of the function of the coronary circulation, a positive outcome does not necessarily mean organic disease; in some instances it is probably an indication of functional disorder.

Book Notices

Allergy in Theory and Practice. By Robert A. Cooke, M.D., Sc.D., F.A.C.P., Attending Physician and Director of the Department of Allergy, the Roosevelt Hospital, New York City, in Association with Horace S. Baldwin, and others. Cloth. Price, $8. Pp. 572, with 44 illustrations. W. B. Saunders Co., W. Washington Square, Philadelphia 5, 1947.

The author is a pioneer in the field of allergy, and this volume represents his experience and his teaching during more than thirty years. The book covers the theoretical and clinical aspects of the various allergic diseases, together with allergic factors in rheumatic fever, glomerulonephritis, tuberculosis and lupus erythematosus. A large part is given over to the fundamental aspects of allergy. The various theories regarding anaphylaxis, allergy and immunity are analyzed with great care. The role of histamine or some H-substance is discussed, but the author correctly points out that "actually there is as yet no convincing and confirmed proof that H-substance is liberated in the allergic wheal."

Much attention is given to serologic features of the immediate wheal-reacting allergies, pathologic-anatomic aspects of allergy and immunochemistry of antigens and antibodies. The various allergic conditions are then discussed individually, and this is followed by chapters on allergy due to bacteria, inhalants, foods, drugs, endocrine products, serum and physical allergy. There is also a chapter on skin testing and one on laboratory procedures.

Most of the book is by Dr. Cooke, but chapters also are written by thirteen associates. Asthma is divided into noninfective and infective, and a small but excellent concise pharmacopeia is attached. Morphine or other opium derivatives are advised in the treatment of severe bronchial asthma. Most allergists are strongly opposed to this advice; they have seen too many fatalities follow within a few hours after the needle has been inserted. Throughout the book runs the infection motif, this factor in allergy being more strongly stressed by the author than by most other allergists. This does not imply that the author is wrong. Cooke is almost certainly correct when he insists that true immediate positive whealing skin tests in "eczema" (atopic or intrinsic dermatitis) are not necessarily related to the dermatitis itself; they signify either associated or potential allergies which occur much more rapidly than does "eczema."

The fundamental and theoretical aspects of allergy are concisely stated. No other book is more authoritative in this respect. It summarizes all the important research work to date and points out some of the problems which need investigation. The clinical section of the book is also good but is not as distinctive. It lacks many of the details which would enable general practitioners to cope successfully with difficult allergic problems. Skin testing, according to Spain, one of the co-authors, should be done only by the intracutaneous method. He states (page 109) that "by experience it has been learned that the potencies adopted (of various extracts) are quite safe except for the occasional, exquisitely sensitive person who can usually be identified before testing by points in his clinical history." That this statement leaves something to be desired is shown by continuing case reports of death or anaphylactic shock after intracutaneous skin tests. Much to be preferred is the statement in the same book (page 502) by Walzer, another co-author, that "the scratch test is by far the safer method for the novice who is not fully cognizant of the dangers of testing and of the steps for preventing and counteracting untoward reactions which may result from the procedure." The chapter on migraine, from the standpoint of allergy, has a defeatist point of view; the importance of allergy is belittled, this despite the many reports of complete relief from attacks when the food has been discovered and avoided. Details regarding elimination diets or diet records should be given in this chapter.

The book is strongly recommended to all interested in the field of allergy and is a must for those who are especially concerned with studies of immunology. It is well written, concise, well printed and nicely illustrated. It has many good case reports and references.

Elements of Genetics: Mendel's Laws of Heredity with Special Application to Man. By Edward C. Colin, Ph.D. Second edition. Fabrikoid. Price, $3.50. Pp. 402, with 90 illustrations. Blakiston Co., 1012 Walnut St., Philadelphia 5, 1946.

This book is attractive in format and generously illustrated with diagrams, drawings and well chosen photographs. The author presents clearly and concisely the principles of heredity. He includes an up to date discussion of cytogenetics, the nature and causes of mutations, the relative roles of environment and heredity, inbreeding and crossbreeding, and factors involved in evolution. The important subject of probability is presented with unusual clarity. The historical material, particularly the contribution of Mendel, is skilfully used as a basis for presenting genetic principles. Fully half of the book is devoted to a discussion of human heredity. Included here are hereditary characteristics of skin, hair, nails, teeth, eyes, skeleton and muscles and of the circulatory, respiratory, excretory, endocrine, digestive, reproductive and nervous systems. Hereditary factors in cancer and other diseases are considered. Examples of human sex-linked factors, those on the X and the Y chromosomes, are given. However, Haldane's interesting work on partially sex-linked factors and his mapping of the homologous section of the X and Y chromosomes are omitted. The medical man will find this book of unusual interest in that it presents clearly the principles of heredity and then shows their application to the human body in health and disease.

The final chapter on improvement of the human species deals with both negative and positive eugenics. Exception might be taken to certain implications concerning immigration laws and the subsidization of families of the so-called fit. However, the analysis of the role of negative eugenics, marriage restrictions, segregation and sterilization in reducing different types of hereditary defects in a country is exceptionally well presented. If carefully studied, the contents of this book could be highly illuminating to those medical practitioners whose training has not included a course in genetics. It is particularly recommended to young men in medicine or intending to enter this field.

La chirurgie en obstétrique. Par R. Keller, professeur de clinique d' obstétrique et de gynécologie à la Faculté de médecine de Strasbourg, et A. Gínglinger. Préface du P^r Reeb. Paper. Price, 230 francs. Pp. 232, with 79 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1916

This book does not deal with obstetric operations such as forceps deliveries but with surgical procedures for complications that occur during gestation and also with operations for conditions that prevent pregnancy. The authors describe and in most cases illustrate operations for (1) malformations of the genital organs such as imperforate hymen, stenosis of the vagina and cervix, absence of the vagina and double vagina or uterus, (2) acquired sterility due to inflammatory disease, neoplasms and retroflexion, (3) special obstetric conditions which can be remedied by surgical procedures such as ectopic pregnancy, fixed retroflexed gravid uterus, hydatid mole and chorionepithelioma, (4) complications of pregnancy which can be corrected surgically, including appendicitis, intestinal obstruction, cancer of the cervix, fibromyomas of the uterus and ovarian cyst, (5) soft part and bony dystocia at the end of pregnancy and during labor, including cesarean section, symphysiotomy and means of treating placenta previa, abruptio placentae, rupture of the uterus and other conditions, (6) postpartum infections such as uterine abscess, phlebitis, peritonitis and pelvic abscess and (7) noninfectious complications after labor such as inversion of the uterus, vesical and rectal fistulas and perineal lacerations.

A large portion of the book deals with rare conditions, some of which are never encountered even in the lifetime of obstetricians of long experience. The only operations illustrated for constructing a vagina are those of Schubert and Baldwin-Mori, both of which are now obsolete because much simpler and safer operations exist. Likewise, the Braxton Hicks version should be discarded for the treatment of placenta previa. Since this is a book dealing with surgery there should be more illustrations. Nevertheless the book is well written, and the advice given is generally practical and useful. It should be helpful to obstetricians and surgeons who can read French.

Textbook for Psychiatric Attendants. By Laura W. Fitzsimmons, R.N., B.S., M.A., Assistant Director of Nurses, and Chief Neuropsychiatric Nurse, United States Veterans' Administration. Cloth. Price, $3.50. Pp. 332, with 2 illustrations. Macmillan Company, 60 Fifth Ave., New York 11, 1947.

Although this volume is said to be designed for attendants in mental hospitals, the treatment of topics is strongly reminiscent of books of instruction for psychiatric nurses. The vocabulary is occasionally erudite and will not be readily understood by many attendants; e. g. "patients who are cognizant of their surroundings" (p. 148), "interproximal surfaces of the teeth," "upper lingual surfaces" (p. 249). On the other hand, phrases are used which are not in good repute in schools of nursing, such as "a patient is diagnosed as having . . ." (p. 31). It is not good form today to refer to patients as "cases" (pp. 34 and 192) but rather to speak of persons having symptoms or disease conditions. As a textbook it leaves something to be desired. The index is incomplete. The only item which in any way refers to medications is "labels, medicine," although "administration of medicines by mouth" appears on pages 296-299. In view of the importance given today to the use of visual aids as a desirable teaching aid, it is unfortunate that there are no diagrams or illustrations to help the attendant in either the nursing procedures or the management of patients. There should be a considerable demand for a textbook for psychiatric attendants. If the demand meets expectations, the book should be carefully edited to fulfil successfully the requirements of the trainee attendant before the publishing of a second edition.

Early Ambulation and Related Procedures in Surgical Management. By Daniel J. Leithauser, M.D., F.A.C.S., Chief of Surgery, St. Joseph Mercy Hospital, Detroit, Michigan. Cloth. Price, $4.50. Pp. 232, with 36 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1946.

This is a highly personalized account of the experience of one surgeon with early ambulation postoperatively. The author does not claim priority, and indeed, many surgeons have long practiced some form of early rising after operation. This does not mean a shortening of the accepted lengthy stay in bed by a few days but involves a systematic attempt to force (better persuade) even reluctant patients out of bed within a few hours after operation. The advantages of such procedures are now generally recognized and need not be detailed here. Early ambulation has thus become the preventive phase of physical rehabilitation by preventing the debility associated with confinement to bed for any long period. The author outlines briefly some historical features of the technic and the physiologic principles forming the scientific basis for the method. He is a strong advocate of the transverse incision, and the use of steel wire for closure of laparotomy wounds. The particular relationship between these two features, especially the second, and early rising is a matter of some controversy. Most important in the whole scheme is the nursing care. When nurses understand the importance of early ambulation and are properly trained to assist the patient in his first few attempts, the method will be spectacularly successful. This the author emphasizes. The results of his experiences are analyzed and are impressive.

Medical Services by Government: Local, State, and Federal. By Bernhard J. Stern, Ph.D. Studies of the New York Academy of Medicine Committee on Medicine and the Changing Order. Cloth. Price, $1.50. Pp. 208. Commonwealth Fund, Division of Publications, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1946.

This is one of many monographs published in recent years by the Commonwealth Fund under the auspices of the Committee on Medicine and the Changing Order of the New York Academy of Medicine. The author traces briefly the development of governmental responsibilities for medical services from the poor laws of the colony days to the present time. The repressive features of the early poor laws have never quite disappeared from government medical service, particularly at the state and local levels. Local responsibility still prevails and, according to the author, "has led to wasteful multiplicity of small administrative jurisdictions." The assumption by state governments of more and more responsibility in the field of medical services has been instrumental in extending the scope beyond the indigent. Data on expenditures of government agencies for medical services are fragmentary; yet they seem to bear a direct relation to the per capita income of the area. A short but comprehensive picture is given of the extent of government participation in the provision of hospital services. The phenomenal growth in government hospital facilities, the change in public attitude toward such institutions and the resulting demand for more adequate services has brought about a vast federal grants-in-aid program. This program is traced in detail. Considerable discussion is also given over to the medical services traditionally provided by the federal government. Dr. Stern has done an excellent job in tracing the shifting role of the local, state and federal governments in the field of medical care. One of the few criticisms that can be made is that throughout the entire discussion he has dealt with medical care in terms of dollars, facilities, statutes and agencies with too little recognition of the role of the physician as an individual and as a member of a profession.

A Psychology of Growth. By Bert I. Beverly, M.D., Rush Assistant Professor of Pediatrics, College of Medicine, University of Illinois, Chicago. Cloth. Price, $2.50. Pp. 235. McGraw-Hill Book Co., Inc., 330 W. 42d St., New York 18, 1947.

This book attempts to present the psychology of growth and development in a way which will help nurses to gain an insight into their own problems as well as those of their patients. It traces human growth and development from infancy, through childhood and adolescence to maturity. The first six chapters deal with the foundations of mental health, the 2 year old, adjusting to environment, intelligence, mental deficiency and the school child. In the remaining portions of the book fears, behavior problems and their causes, preadolescence, adolescence, juvenile delinquency and adult adjustment are discussed. A rather complete list of visual aids is included to supplement the material in the text. References for additional study are provided at the end of each chapter. The author uses a very practical approach to solving problems that may be encountered at various age levels. Numerous examples serve to illustrate methods of meeting individual needs at various stages of growth and development. Throughout the discussion stress is laid on the interdependence of mental, emotional and physical aspects of personality development. The book is clearly written and well printed. While it is not illustrated, the potentialities for correlation with the suggested visual aids offer many possibilities. It will probably have its greatest usefulness as a textbook for courses in psychology and in professional adjustment and as a reference work for the graduate nurse working in the field of pediatrics, psychiatry or public health. However, it may be read with profit by social workers, teachers and parents.

Complete Handbook on State Medicine. By J. Weston Walch. Paper. Price, $1.25. Pp. 170. J. Weston Walch, Box 66, Pearl St. Station, Portland, Maine, 1946.

This brochure is primarily for students preparing material for debate on the subject of "sickness insurance." It represents a new approach in debate manuals or at least a composite of most of the usual approaches. In an effort, a rather successful effort, to make the debate question interesting to the readers the author presents his material in a casual manner. One example is the title of chapter I, "Ho, Hum, What's the Argument All About?" Another is his introduction to the Wagner bill. "A cat, they tell me, has nine lives, though you can't prove it by me. But this I do know—the Wagner-Murray-Dingell bill has had three." Throughout this informal presentation there is a great deal of factual data. Numerous references are made to well chosen sources for additional material. In the first thirty-two pages Mr. Walch explains the debate question and the terminology, discusses briefly the present systems of medical care and gives suggestions for preparing the debate. Much of the remainder of the publication is devoted to the preparation of both affirmative and negative briefs with supporting evidence, and references accompanying each brief. The final few pages contain suggestions for rebuttal. In presenting the supporting evidence the author has sacrificed completeness in order to use as many quotations as possible. Three hundred and forty-seven quotations appear for the affirmative and three hundred and forty-four are used in support of the negative. Too often they are one sentence statements plucked from some one's talk or article which, if read as a part of the whole, might mean something different than intended. Aside from this criticism, the publication is well done and should be in the hands of every debater.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

"PAINLESS" CORONARY OCCLUSION

To the Editor:—One wonders how many persons suffer "silent" coronary infarction. By that one means coronary thrombosis and infarction in which symptoms are absent, so slight or so atypical that the heart is not suspected or at least a definite diagnosis of coronary disease is not made. This question could be answered knowing how often scars of old infarcts are found in hearts of those in whom coronary thrombosis was never diagnosed during life. Such figures are probably available in many reports by pathologists, but I am unable to find any such report listed in the indexes. I would appreciate information on the subject.

D'Arcy Prendergast, M.D., Toronto.

Answer.—Painless or silent myocardial infarction due to coronary occlusion does exist, but its exact frequency has not yet been established. At times its occurrence has certainly been overestimated as the result of inadequate history taking. Most experienced observers who have seen hundreds of cases of acute myocardial infarction find that painless or silent acute coronary occlusion is distinctly uncommon. It may occur in the presence of severe shock and possibly severe acute alcoholism and quite possibly, but infrequently, in extremely insensitive persons. Its occurrence otherwise must be open to question. Two cases reported not long ago from Seattle (King, R. L., and Cleveland, F. E.: Acute Coronary Occlusion Without Pain, *Clinics of the Virginia Mason Hospital* **24**:35, 1946) occurred in diabetic patients; the first patient was intermittently unconscious and the second patient was quite drowsy, doubtless affected by an inadequately controlled diabetic state.

A recent review of 78 cases of myocardial infarction at the Massachusetts General Hospital in which necropsy was performed gave no history of pain in 9, with serious shock or coma or cerebral vascular accident present in 10 others in which pain could not be inquired about.

VESICAL AND PROSTATIC CANCER

To the Editor:—In the Jan. 25, 1947 issue of The Journal on page 279 vesical and prostatic carcinoma is discussed. The following questions relate to that subject: 1. When the spread is along the ejaculatory ducts what are the early and late symptoms besides being able to palpate the growth in the prostatic notch? 2. What would be the difference in the early and late symptoms when the metastases occur along the vertebral system of veins instead of along the ejaculatory ducts? 3. What is meant by the term "median bar" of the prostate? Is it prone to become cancerous more than any other portion of the prostate and if the median bar is somewhat enlarged is it as likely to be benign as to be malignant? 4. In a transurethral resection of the prostate is the ejaculatory function of the ejaculatory duct permanently lost? 5. Babcock's Surgery speaks of an early cystitis. Once cystitis is established I take it that the condition is intractable and remains a symptom in spite of any and all treatment medically. Is this true? 6. Is the prostate considered one of the genital organs?

M.D., Kansas.

Answer.—1. The spreading of carcinoma along the ejaculatory ducts could indicate its origin in the posterior lobe. Cancer of the posterior lobe is manifested by induration and obliteration of the median prostatic groove proximal to the veramontanum. Early symptoms of carcinoma of the prostate may be absent. Extension along the ejaculatory ducts may easily produce unexplained distention of the seminal vesicles. Carcinoma may be suspected early when the prostate is palpated over an instrument and a nodule is present.

2. Early symptoms of metastases by way of the vertebral system of veins may be limited to localized pain. Early x-rays of the spinal column will be negative. Later osteoclastic bone changes will confirm the suspicion of metastases.

3. A median bar implies hypertrophy of the posterior commissure of the prostate. A median bar is not apt to become cancerous; the enlargement is usually benign and consists of fibrous or adenomatous tissue.

4. The function of the ejaculatory duct following transurethral surgery is not lost unless it is inadvertently removed.

5. Hunner's ulcer or interstitial cystitis with a contracted bladder has been referred to as an intractable cystitis. Cystitis is usually amenable to treatment, particularly when the cause can be eradicated.

6. The prostate is a male sex organ and is a link in the male genital system.

DISPOSAL OF SEWAGE AND WATER BORNE DISEASE

To the Editor:—I should like your opinion on the following two statements:

1. It has been estimated that 70 per cent of sewage in the United States is dumped into surface waters without treatment.

2. In spite of the health hazards involved, the practice has been continued because of the cost of treating sewage.

Is the A. M. A. cognizant of this practice? Is there a greater prevalence of water borne diseases in those areas of the United States where sewage is dumped into surface waters without treatment? If so, should not the public be enlightened with regard to this practice with the hope that it would insist on effective sewage control systems regardless of cost?

David J. Sandweiss, M.D., Detroit.

Answer.—1. The sewage of somewhat more than 50 per cent of the total urban population of the United States is now treated, either by what is known as partial treatment or by complete treatment.

2. The practice of discharging raw sewage has been continued not only because of the cost involved but because of a variety of complex legal, administrative and fiscal issues. Cost is a significant item in these considerations, but not the only item. Progress in correcting this situation has been materially retarded during the war period and, in the present high level costs of labor and materials, in the postwar period.

Administrative attack on the problem, however, continues at a high level and it may be anticipated that the next ten years will see billions of dollars expended in correcting the situations to which you refer.

The American Medical Association is cognizant of the practice and is lending its efforts toward increasing the rate of correction. Water borne diseases in general in the United States are now at their lowest point in our history, as the result obviously of the combined efforts of engineering and medical officials over the last half century.

SENILE OSTEOPOROSIS OR HYPERPARATHYROIDISM

To the Editor:—A woman aged 57 injured her back three years ago and since that time has had constant back pain and progressive kyphosis. X-rays of the skull and lumbar spine showed loss of normal bone density. The tables of the skull were mildly granular, suggesting the possibility of low grade hyperparathyroidism. Blood calcium was 10 mg. per hundred cubic centimeters, inorganic phosphorus 2.8 mg. per hundred cubic centimeters and serum alkaline phosphatase 46.3 Bodansky units. Is this the picture of senile osteoporosis or hyperparathyroidism? How may I further establish the diagnosis?

John Shelton Reed, M.D., Kingsport, Tenn.

Answer.—The high serum alkaline phosphatase level is against senile osteoporosis. Furthermore, one seldom sees demineralization of the skull in that condition. The normal serum calcium level is against hyperparathyroidism unless the patient had at the same time a low serum protein level. The blood findings are consistent with osteomalacia.

To establish a diagnosis, one would like repeat serum calcium, phosphorus, phosphatase determinations, a serum protein determination with albumin/globulin ratio if possible, and a quantitative twenty-four hour urine estimation for calcium. A low serum calcium excretion would be strong evidence against hyperparathyroidism, moderate evidence against osteoporosis and strong evidence in favor of osteomalacia. A high urinary calcium excretion would not rule out osteomalacia, however.

COSMETIC EFFECT AFTER REMOVAL OF FACIAL CYST

To the Editor:—Has any satisfactory method been developed for removal of a sebaceous cyst from the skin without leaving a scar or other disfigurement? The patient is a pretty young girl of 18 who has a sebaceous cyst about the size of a lima bean in the skin of the cheek. This was recently infected, red and tender but is now quiescent and painless. My previous experience has been that excision is always followed by some scarring, which it is hoped to avoid in this case. At present the nodule is not too unsightly, but it seems to cause her a great deal of concern.

Willis P. Baker, M.D., Santa Ana, Calif.

Answer.—There is no possible way to remove a cyst of this type without an incision through the skin. The best cosmetic result can be obtained if the line of incision is placed so that it will parallel a normal skin fold or wrinkle. The size of the incision should be made as small as will permit legitimate exposure of the tumor. Minimal postoperative scarring can be obtained if the wound edges are sutured with small interrupted stitches of fine nonabsorbable suture material. The stitches should be removed within three days so as to avoid potential stitch hole scarring, but the wound edges should be supported with some material such as a dumb-bell strip of adhesive for two to three weeks postoperatively. Failure to carry out the latter step may permit the fresh scar to widen from underlying muscle activity.

CELLOSOLVE ACETATE

To the Editor:—I should like information as to the possible toxic effects of the fumes of heated Cellosolve Acetate on industrial workers. The process consists in heating 20 gallons of the chemical to 50-60 C. and then rapidly cooling it with solid carbon dioxide. Is it possible for taste, smell, the eyes and sexual potency to be affected by the fumes engendered? Would the toxic effects be permanent?

M.D., New Jersey.

Answer.—Published information on the toxic properties of Cellosolve Acetate (ethylene glycol monoethyl ether monoacetate) derives from animal experiment rather than from human beings actually exposed in industry. The vapor pressure of Cellosolve Acetate at 20 C. is 1.25 mm. of mercury, which is low. Obviously vapor pressure at 60 C. will be higher. According to Von Oettingen and Jirouch (*J. Pharmacol. & Exper. Therap.* **42**:355 [Aug.] 1931) it hemolyzes blood in vitro and causes the formation of methemoglobin. It has a distinct depressant effect on the central nervous system and causes, first, irritation and then depression of the sensory nerve endings and paralysis of the motor nerve fibers. It depresses the perfused frog heart and organs with smooth muscle structure. It causes distinct irritation of the conjunctiva of the rabbit's eye, characterized by hyperemia and edema of the lower eyelid. There are no reports with regard to the toxic action in man, but the data mentioned appear to indicate that it is by no means a harmless material. Hamilton and Johnstone (New York, Oxford University Press, 1945) in referring to the work just cited note that repeated exposures of rats to vapors of glycol ethers, 300 to 400 parts per million, show that "small but measurable effects" on the cellular elements of the blood appear, such as increase in young granulocytes and decrease in hemoglobin concentration and red cell count.

Browning (British Research Medical Council Report number 80, 1937) places the toxicity level as that of Cellosolve (ethylene glycol monoethyl ether). The toxicity of the latter is well established and is revised by Browning. Still further information derives from the work of Smyth and others (*J. Indust. & Toxicol.* **23**:259, 1941). This group determined the MLD/50 on small animals for some sixty glycols and related compounds. Cellosolve Acetate proves to stand about midway in the group. The vapors of Cellosolve Acetate may lead to eye irritation and may influence taste and odor perception. Higher concentration may serve as a central nerve depressant and may act adversely on the renal system. Deviation from the usual in the blood picture may constitute a prime warning of damage. It is unlikely that this substance will exert any direct influence on sexual capacity.

ADMINISTRATION OF HISTAMINE IN PRESENCE OF CORONARY DISEASE

To the Editor:—In recent months there has appeared in the lay press some reference to the use of histamine in the treatment of patients who complain of dizziness that is otherwise unexplained. I have under my care such a person but who has had in recent years two episodes of coronary artery disease, and I have hesitated to give him histamine in an effort to overcome these attacks of dizziness because of the fact that I was afraid there might be some danger associated with it.

Oliver L. Sharp, M.D., Greensboro, N. C.

Answer.—In the heart-lung preparation of human beings, histamine dilates the coronary arteries. Presumably the same action occurs in the living subject.

Patients with Ménière's disease and coronary heart disease have been given a 1:250,000 dilution of histamine administered intravenously without producing untoward symptoms. The rate of administration should be carefully regulated.

Peters and Horton recently published a report on 25 normal subjects in whom continuous intravenous administration of histamine was given at rates varying from 0.0017 to 0.044 mg. per minute. Significant changes were observed in the electrocardiograms in 24 of the 25, but the effects were considered to be of minor physiologic importance. The most common change was the loss of amplitude of the T waves in different leads, sometimes in all leads, which, in some cases, proceeded to either the isoelectric level or to inversion of the wave. The extent of loss of T wave voltage was roughly and directly parallel to the rate of administration of histamine. In some cases, however, the effect of histamine was lost, and the T waves recovered either partially or completely their former amplitude in spite of a continued and sometimes increased dosage of histamine. The effect of histamine on the T waves disappeared within five to fifteen minutes after injection of the drug was discontinued.

The action of histamine on coronary circulation varies in different species. Essex and his colleagues found that histamine increased the coronary flow in the unanesthetized dog.

POSTRADIATION TREATMENT OF CARCINOMA OF CERVIX

To the Editor:—A woman aged 40, who weighs 80 pounds (36 Kg.), has a grade 1 squamous cell carcinoma of the cervix apparently early and confined to the cervix. Six months ago she was treated with 5,000 mg. hours of radium and 4,500 roentgens of x-rays, half value layer 1.5. There is no evidence of recurrence of cancer. The cervix has healed. Is total hysterectomy advised at the present time?

G. B. Hubbard, M.D., Jackson, Tenn.

Answer.—Although the cervix may appear to be entirely healed, Martzloff has shown that viable tumor cells may remain entrapped within the cervix and cause recurrence at a later date. The patient described in the query, because of age, weight and an apparently early lesion, is an ideal subject for the radical hysterectomy of the Wertheim type. Therefore one could not disagree with those who would favor removal of the uterus by this procedure. However, the high survival rate (80 per cent) of patients with such early lesions treated with radium and x-rays in adequate dosage, such as has been given this patient, justifies watchful expectancy, postponing surgical removal until definite evidence of recurrence can be demonstrated.

INFECTIONS AMONG PATHOLOGISTS AND MORTICIANS: WEARING OF RUBBER GLOVES

To the Editor:—Are there any statistics available showing the incidence of infection which morticians and pathologists have sustained from working on corpses? It is assumed that chemical changes set in shortly after death and that organisms are not viable long. However, there are occasions when morticians get tuberculosis, and there is a question in their mind as to the source of such infection, not only of tuberculosis but of other infections. A coroner contends that the practice of using gloves in examining bodies is the wrong practice, as the prick of a glove and finger makes for optimum conditions of culture medium, thus reviving the organisms sufficiently to be viable and pathogenic and making it possible to transmit infection to the examiner. This has raised some controversy in a mortician's organization. Any information you can give on this matter will be of help and interest.

J. A. Cremer, M.D., Denver.

Answer.—Statistics showing the incidence of infection (including tuberculosis) which morticians and pathologists have sustained from working on corpses have not been found. There are isolated cases of tuberculosis among embalmers. Some believe their infections traceable to given instances. Similarly, instances are known wherein embalmers and pathologists respectively have acquired infection as the result of an accidental wound during embalming procedure or while conducting a postmortem examination.

In supporting the hazardous concept of the embalmer's occupation, insurance classifications offer a clue. The majority of companies who write health and accident policies regard men in this occupation as class C and D risks.

Several years ago the question concerning the value of rubber gloves as a safety measure was raised in another mortician's organization. Again statistics were not available for supporting either point of view. Nevertheless an opinion given by an eminent pathologist was to the effect that there could be little question that pathologists suffered many more hand infections than physicians in general. He always wore gloves. He believed that organisms which would produce an infection of the hand are deposited within the skin when the finger is pricked and that they are uninfluenced by warmth and moisture of the hand and glove.

Between 1932 and 1935 at the Los Angeles County General Hospital there was a difference of opinion among the classes, particularly between those who had worked around a funeral home before enrolling in school, as to the merit of rubber gloves. However, every student was required to wear them while in the preparation room. The importance of caring for gloves properly while in use and in cleansing them for subsequent use was stressed. During this interval approximately two hundred students received their practical training in preparing all types of cases. Only one instance of infection was reported. It was not due to accident while wearing rubber gloves.

There is sufficient periodic interest in this subject to justify a bona fide investigation to settle this long controversy.

MENSTRUATION AND BATHING

To the Editor:—Aside from the esthetic factors, is menstruation a contraindication for bathing, particularly in cold water, or swimming?

M.D., Iowa.

Answer.—Menstruation is not a contraindication to any form of bathing except when the flow is profuse. In such cases a hot tub bath might increase the loss of blood still further.

OPEN VERSUS CLOSED TREATMENT OF FRACTURES

To the Editor:—*Has it ever been definitely proved that simple fractures treated by open reduction heal more slowly than simple fractures treated by closed methods, comparing, of course, fractures of the same site, degree of severity and patients of similar age groups? That fractures treated by open operation heal more slowly has seemed to me to be quite evident, but there are so many variable factors it is difficult to prove the point.*

Herbert J. Forrest, Lieutenant, M. C., U. S. Army.

Answer.—The point has not been definitely proved but is suspected by some experienced surgeons and laughed at by others. Advocates of the open method often disclaim slower healing and claim on the contrary more rapid repair, saying that perfect reduction, supposedly obtained by operation, calls for less effort on the part of the patient to form callus. This is because the perfect approximation of fragments requires a smaller amount of new bone formation, there are smaller gaps to bridge and the various bone elements are closely apposed. They also may claim that shorter immobilization is required and earlier use of the part is permitted to restore muscle volume and increased blood supply in the area. Many catastrophes have resulted from loose and unskilful application of this so-called principle because it provides a too short immobilization and defeats the process of healing itself by permitting too early and too great strain at the fracture site.

The most difficult factor to weigh is the bone forming power of any single person even in the same age group. There may also be a minimal degree of totally unrecognized infection. One still unmeasured factor is the loss at (early) operation of much if not all of the extravasated blood and exudate around the fracture site, amounting in major fractures to several ounces, which runs out as soon as the fracture is cut down on. This contains not only calcium and phosphates but also phosphatase useful in the healing process and probably has much to do with sustaining a favorable p_H in the early part of the repair.

No line of treatment seems to hasten the normal process of final complete calcification of callus after closed fracture in healthy persons, but many factors such as nonexpert operating, too short immobilization or unwise weight bearing or use may prolong it. This does not apply to greatly delayed union or nonunion.

TREATMENT OF CARBON MONOXIDE COMA

To the Editor:—*Which are the therapeutic measures at present adopted in the United States in cases of coma from carbon monoxide? Are the blood transfusions still used?*

Jean Enderlé, M.D., Brussells, Belgium.

Answer.—In cases of coma due to carbon monoxide poisoning it is important to supply 100 per cent oxygen or 7 per cent carbogen (7 per cent CO_2+ 93 per cent O_2) as quickly as possible to support the heart and to remove the carbon monoxide from the blood. It has been found that as far as immediate survival and neurologic sequels are concerned it matters not which of the two gases is used. In either case (which is also true if air is used) it is important to keep the minute volume of pulmonary ventilation as high as possible without harming the lungs for a period of five to fifteen minutes. By the end of this time the carbon monoxide saturation of the blood has been reduced to safe limits (5 to 10 per cent) and if the patient is still in coma blood transfusion will not be of assistance unless the patient is in a state of circulatory shock. Blood transfusion has no place in the treatment of carbon monoxide asphyxia in the absence of circulatory shock. Coma may sometimes persist for two or three hours after the oxygen saturation of the blood has returned to 90 per cent in the presence of a normal blood pressure, following which full functional recovery may result; the cause of this coma is uncertain. The prognosis is grave as regards neurologic sequels if the coma persists longer than thirty minutes after the reduction of the oxygen saturation of the blood to 90 per cent.

SULFHYDRYL FOR ROENTGEN RAY BURNS

To the Editor:—*Is sulfhydryl of value in the treatment of chronic x-ray burns of the hands? (Cruthiras, A. E.: Importance of Sulfhydryl in Treatment of Corneal and X-Ray Burns, Am. J. Surg. 72:500 [Oct.] 1946; abstr. The Journal, Jan. 11, 1947, p. 131.) Is straight sulfhydryl sprayed on ulcers or is penicillin used in 1:1 spray? What strength penicillin is used and how is it mixed?*

Robert H. Kerr, M.D., Alma, Neb.

Answer.—The article to which reference is made in the query is the only report available on treatment by sulfhydryl of lesions produced by roentgen rays. Until further reports are available the treatment must be considered experimental, but apparently it is quite harmless. It appears from the original article that when penicillin is used it is applied in solution separately from the sulfhydryl spray and ointment.

TOXIC ADENOMA OF THYROID AND PROPYL-THIOURACIL

To the Editor:—*A patient with a toxic adenoma of the thyroid gland developed a universal pruritus on taking thiouracil in doses as low as 25 mg. daily. Is there any other related compound that may be used in place of thiouracil? If there is, please give me the dosage and untoward effects.*

Morris I. Gerner, M.D., Chester, N. Y.

Answer.—One could try propyl-thiouracil. This is begun with a dose of 50 mg. three times a day. It is sometimes necessary to give as much as 200 or 300 mg. daily to produce the maximum effect. It should, however, be borne in mind that response to this drug may be rather slow, particularly by a patient with toxic adenoma. The reactions produced by propyl-thiouracil are approximately those produced by thiouracil except that they occur less frequently.

The most serious complication is the development of leukopenia and agranulocytosis, and patients receiving the drug should be observed with great care. A white blood cell count and a differential count should be made at frequent intervals.

There is some difference of opinion as to whether the drug should be used for the medical management of patients with toxic adenoma. It is probably fair to say that the majority of observers favor using it for preoperative preparation in this condition. However, there is no doubt that in many patients with toxic adenoma the condition can be controlled completely with medical measures alone.

SPLENIC ANEMIA AND PREGNANCY

To the Editor:—*A woman aged 27 is three months pregnant. This is her third pregnancy. The patient's first child died at three months of splenic anemia and "enlarged liver." In the patient's second pregnancy labor was induced at eight months and the child lived for five weeks, probably dying of pneumonia. My patient has splenic anemia. The patient's father died of splenic anemia. The patient has had two series of x-ray treatments and two transfusions; she has been taking daily liver injections for four years; also she is getting folic acid 5 mg. three times a day. She is anxious to permit pregnancy to go to term and will take transfusions as indicated, also other therapy. Should pregnancy be permitted to continue? If so, what should the course be?*

M.D., Asheville, N. C.

Answer.—In the absence of data concerning the blood picture it is difficult to suggest the proper therapy for the anemia. It is assumed that the patient's blood is now normal from the daily injections of liver extract for four years and the folic acid. Ordinarily it would be wise to allow the pregnancy to continue unless the anemia becomes extremely severe and cannot be controlled by transfusions, or the size of the spleen limits the space in the abdomen to such an extent that with the enlarged uterus the discomfort is too great. It may be well to investigate the Rh factor in the blood of the patient and her husband before more transfusions are given, as she may be Rh negative and have developed anti-Rh substance from the previous transfusions (if they were Rh+).

SKIN STAINING FROM FRUIT JUICES

To the Editor:—*I am seeing a few patients who work in a fruit preserve factory. From contact with fresh fruits, their hands become stained dark. Is there any way to prevent or decrease this staining?*

Albert Abraham, M.D., Morristown, N. J.

Answer.—The wearing of rubber gloves with impervious sleeves fastened over the glove at the wrist will prevent the fruits or their juices from touching the skin.

Washing the stained hands after work in a 1:2,000 solution of potassium permanganate followed by washing in a 1 per cent solution of sodium sulfite to remove the permanganate stain will bleach the stains. After this procedure the hands should be washed in soap and water and dried, and an emollient cream such as equal parts of lanolin and cold cream should be rubbed into the skin.

MANNITOL HEXANITRATE

To the Editor:—*In The Journal, April 5, 1947, page 1042, a query discusses mannitol hexanitrate for hypertension. I believe that the opinion given in the answer is not in accordance with generally accepted views with regard to the action of compounds of this type. In the answer the statement is made that the nitrite ion is extraordinarily unstable. This is not in accordance with fact. Also the statement is made that the concentration of nitrite ion in the blood is in the order of magnitude of 1 microgram per hundred cubic centimeters. This has been found to be incorrect also. Further, it is stated that why some of the compounds are more active than others is not well understood. The mechanism of the action of organic nitrates and inorganic nitrites in hypertension has been recently elucidated.*

John C. Krantz Jr., Baltimore.

Professor of Pharmacology, University of Maryland.

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EARLY DIAGNOSIS OF POLIOMYELITIS

JOHN F. POHL, M.D.
Minneapolis

Treatment of poliomyelitis should begin as soon as possible after the onset of the disease in order to relieve the discomfort of patients and to minimize crippling. An analysis of 1,125 cases of poliomyelitis treated in Minneapolis during the 1946 epidemic reveals that the symptoms and observations are sufficiently characteristic to enable the diagnosis to be established in most patients within twenty-four hours of the onset. The study also discloses that paralysis is not a useful diagnostic sign because paralysis or weakness of the muscles is not a common early event and in a considerable number of cases does not occur at all. To await the appearance of paralysis to confirm the diagnosis or to begin treatment is inadvisable. It is now recognized, but should be emphasized, that patients without paralysis are often seriously ill and may become crippled from conditions other than paralysis which affect the muscles. All cases should be brought under treatment as soon as possible.

While it is known that the disease varies in the intensity of its attack the early medical symptoms are common to all types of cases including those which do not at any stage show evidence of weakness of the muscles. In this series of 1,125 cases 65.4 per cent (736 cases) progressed to paralysis of some degree but 34.6 per cent (389 cases) did not show paralysis at any time. The mortality was 6 per cent (68 patients), indicating that the epidemic was of average severity and that the observations drawn from the study of these cases are representative of the disease.

EARLY SYMPTOMS

Headache was the most distinctive initial complaint denoting the onset of poliomyelitis. This was usually of a severe, generalized, unrelenting type, which is rare in the illnesses of childhood. Headache was a particularly prominent symptom in 57 per cent of all the patients in this series during the first twenty-four hours of the disease.

Fever was noted early in the disease, but fever is not distinctive as a symptom. In this series fever was recorded in 80 per cent of the patients within the first twenty-four hours of the illness. The elevation of temperature in poliomyelitis is usually moderate and is seldom observed to rise above 103 F.

In addition to headache and fever the principal symptoms of the disease (in the order of frequency of occurrence during the first twenty-four hours) were nausea, vomiting, anorexia, stiff neck, stiff back, painful extremities and general malaise with listlessness.

It has been stated frequently that the early symptoms of poliomyelitis may be indistinguishable from those of the more ordinary diseases affecting the nose, throat and respiratory system. Although 4 per cent of the patients in this series complained of head cold or respiratory infection attributed to the onset of the disease, the complaint was not generally confirmed on physical examination.

Sore throat or tonsillitis was an early complaint in 10 per cent of the patients, but inflammation was not found to be present in the physician's examination of these patients. The absence of inflammation of the throat in patients who complain of sore throat suggests the important possibility that the lesion is a "painful throat" of neuritic origin. The complaint of sore throat occurred ten times more frequently in the cases in which bulbar symptoms ultimately developed than in those which eventually showed paralysis of spinal origin. The inference to be drawn is that patients complaining of sore throat should be watched closely for evidence of bulbar paralysis.

A feature of poliomyelitis which may result in unnecessary delay unless kept in mind is the tendency in some cases for the symptoms to abate temporarily after an initial illness which usually lasts twenty-four hours. This type of history was obtained in 22 per cent of the cases in this series. Scrutiny of the histories of these patients reveals that the early symptoms were definite and recognizable. The significance of the recurrence of symptoms after a remission of two to three days was not apparent and did not seem related to the onset of paralysis. The interval or recurrent type of onset was present in 17 per cent of the patients in whom paralysis never developed. An opportunity was afforded to study 39 patients admitted to one hospital unit on the day of onset of the disease. None of these patients who were hospitalized early showed the phenomenon of recession and recurrence of symptoms, although in several paralysis developed after admission to the hospital.

PHYSICAL EXAMINATION

The diagnosis of poliomyelitis can be established with a high degree of certainty by physical examination. The typical patient lies quietly in bed and does not wish to be disturbed. There is a singular irritability and resentment against being moved or handled. The painful sensitivity of the peripheral tissues indicates the presence of spasm, a common and useful observation for the purpose of diagnosis early in the disease. Stiff neck, stiff back and shortened hamstrings are familiar examples of symptoms caused by the disease, but muscles elsewhere in the body may also be involved by spasm, including those which are not attached to the spine. The disorder occurs in the nonparalytic as well as the paralytic case.

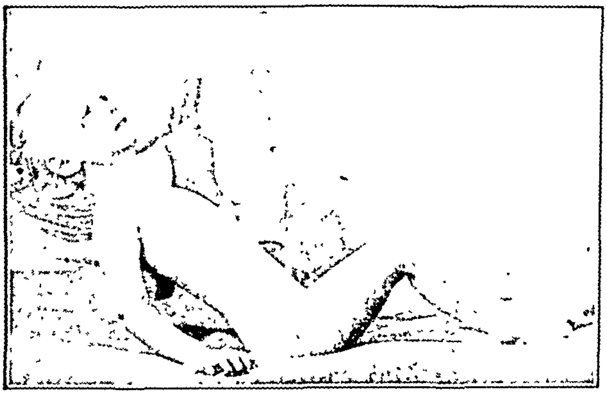
From the Elizabeth Kenny Institute, Minneapolis.

For examination the patient is placed supine on a firm bed or table. On placing the hand beneath the head and attempting to flex the neck resistance will almost invariably be encountered as early as clinical symptoms have occurred. An attempt to flex the body will disclose stiffness of the back. When the trunk is flexed the knees will rise from the bed because of shortness of the hamstring muscles, as shown in the accompanying illustration. The stiffness is due to the condition of spasm in the posterior muscles. On search, the same hypertonicity and shortening may be found, although less frequently, in other muscles of the body and in all types of cases (table 1).

The patient may complain of pain in the muscles involved by spasm, or pain may be elicited by gently stretching the affected muscles.

When the condition affects the muscles of any part of the respiratory mechanism the breathing of the patient may be impaired. Spasm may affect the abdominal muscles and simulate the spasm of acute appendicitis.

It will be noted from table 2 that spasm occurs more frequently in the paralytic than in the nonparalytic type of case. Experience with this group of patients has shown that spasm is severer in the paralytic than in the nonparalytic case and is more difficult to relieve. In this series of cases (1,057 surviving) it was necessary to treat the nonparalytic patients (389) for an average of twenty-three days before the spasm was relieved, whereas from two to ten months (depending on its severity) was required to relieve the spasm in the paralytic cases (668).



Typical patient with poliomyelitis in the acute stage showing examination for spasm in the posterior muscles.

PARALYSIS IN DIAGNOSIS

Paralysis or weakness of the muscles is easily discoverable when it occurs in poliomyelitis, but the value of this observation for the purpose of diagnosis is diminished by the fact that paralysis is not a common early condition and may not occur at all.

There was no detectable evidence of weakness or paralysis at any time in 389, or 34.6 per cent, of the 1,125 cases in this series. Paralysis occurred at some time within fifteen days of onset in 736, or 65.4 per cent, of the patients.

None of the patients complained of weakness or paralysis as an initial symptom, and this condition appeared during the first twenty-four hours in only 5 per cent of the cases (table 3). In 11.7 per cent of the patients the date of development of paralysis could not be determined from case records; but granting that these might have occurred within the first few days of illness, paralysis would still not be considered a common early symptom. It will be noted from table 3 that in 9.6 per cent of the patients paralysis did not occur until after the disease had been in progress for more than seven days.

Table 1.—*Frequency of Occurrence of Spasm on the Basis of Clinical Examination of the Total Surviving (1,057) Cases of Acute Poliomyelitis*

Muscle in Spasm	Occurrences No. of Cases	 % of Total Cases
Posterior neck	1,057	100.0
Posterior spinal	1,057	100.0
Hamstrings	1,057	100.0
Calf	846	80.0
Tensor fasciae femoris	560	53.0
Upper trapezius	220	20.8
Plantar fascia	153	14.5
Quadriceps femoris	103	9.7
Pectoralis major	98	9.3
Quadratus lumborum	70	6.6

The finger flexors, arm adductors, abdominals and biceps brachii were involved to the extent of 2 per cent of the cases and other muscles to a lesser extent.

Patients who manifested bulbar symptoms, such as difficulty in swallowing, nasal regurgitation, facial weakness, nasality and difficulty in speech, gave evidence of muscular dysfunction, on the average, slightly earlier than did patients in whom the spinal type of paralysis developed (table 4).

EXAMINATION OF THE SPINAL FLUID

The spinal fluid should be examined in every suspected case as an aid not only in confirming the diagnosis but in quickly separating out other diseases. The typical spinal fluid of poliomyelitis has the following characteristics:

✓ Crystal clear.
Pressure normal or low.
Protein slightly elevated or normal.
Cell count moderately elevated, usually not above 350 per cubic millimeter. (Cell counts were not elevated in 4 per cent of the cases in this series in which other observations served as the basis of diagnosis. The cell count was normal in 1 per cent of the patients in whom paralysis occurred.)

Table 2.—*Occurrence of Spasm on the Basis of Clinical Examination of Paralytic and Nonparalytic Types of Acute Cases of Poliomyelitis (1,057 Total Living Cases)*

	Occurrence of Spasm			
	668 Paralytic Cases		389 Nonparalytic Cases	
Muscle in Spasm	No. of Cases	% of Cases	No. of Cases	% of Cases
Posterior neck	668	100.0	389	100.0
Posterior spinal	668	100.0	389	100.0
Hamstrings	668	100.0	389	100.0
Calf	556	83.4	290	74.6
Tensor fasciae femoris	374	56.0	186	47.9
Upper trapezius	173	25.9	47	12.1
Plantar fascia	124	18.6	29	7.5
Quadriceps femoris	93	13.9	10	2.6
Pectoralis major	95	14.2	3	0.8
Quadratus lumborum	55	8.2	15	3.9

The polymorphonuclear cells frequently predominate during the first forty-eight hours of the disease, after which time the majority of the cells are usually of the mononuclear variety.

Other of the usual laboratory studies of the spinal fluid or blood have not yet proved useful, as no changes have so far been disclosed which are particularly distinctive of poliomyelitis. Such examinations, however, are helpful in establishing a discriminative diagnosis in suspected cases which are under observation.

DIFFERENTIAL DIAGNOSIS

The diseases affecting the nervous system which are commonly confused with poliomyelitis are Guillain-Barré, encephalitis, meningitis and transverse myelitis. Guillain-Barré disease is noteworthy in contradistinction to poliomyelitis for the absence of stiffness of the neck and for the tendency of weakness or paralysis to progress over a period of weeks. The spinal fluid typically shows a high protein content without an increased cell count.

The patient with meningitis or encephalitis is usually restless and hyperactive at the onset in comparison with the listlessness and lethargy of the poliomyelitis patient. Transverse myelitis is marked by sensory changes, most unusual in poliomyelitis, in addition to the weakness.

Table 3.—*Occurrence of Paralysis in 1,125 Cases of Acute Poliomyelitis*

Day of Occurrence	No. of Cases	% of Cases
First	56	4.9
Second	82	7.3
Third	119	10.7
Fourth	89	7.9
Fifth	59	5.2
Sixth	52	4.6
Seventh	40	3.5
Eighth through fifteenth	108	9.6
Undetermined *	131	11.7
Total	736	65.4
Total paralytic cases	736	65.4
Total nonparalytic cases	389	34.6
Total cases	1,125	100.0

* The day of onset of paralysis was not known in 131 paralytic cases including the 68 deaths.

Table 4.—*Occurrence of Paralysis in Spinal and Bulbar Types of 605 * Acute Cases of Poliomyelitis*

	First Appearance of Paralysis			
	431 Spinal Cases		174 Bulbar Cases	
Day of Occurrence	No. of Cases	% of Cases	No. of Cases	% of Cases
First	37	8.5	19	11.0
Second	56	13.0	26	15.0
Third	81	18.7	38	21.8
Fourth	61	14.3	28	16.1
Fifth	41	9.5	18	10.3
Sixth	38	8.8	14	8.0
Seventh	31	7.2	9	5.2
Eighth through fifteenth	86	20.0	22	12.6
Total	431	100.0	174	100.0

* The day of onset of paralysis was not known in 131 paralytic cases including the 68 deaths.

CONCLUSION

In the acute stage of poliomyelitis the principal manifestations in the peripheral structures which are of use in diagnosis are spasm (shortening of the muscles) and paralysis (or weakness of the muscles). Spasm appears early and is present in every case. Paralysis is easily discoverable when it occurs, but it is not a common early observation and does not appear at all in a considerable number of cases. Spasm is generally severer in the paralytic patient; the longer it is untreated the more difficult it is to relieve. In order to aid the prevention of contractures and deformities from spasm it is advisable to begin treatment to the peripheral tissues before weakness or paralysis has occurred. No delay in treatment is prudent once the diagnosis has been established.

OCULOGLANDULAR TULAREMIA TREATED WITH STREPTOMYCIN

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Lesions resembling oculoglandular tularemia were first noted by Martin[1] in 1907. He described 3 cases of conjunctivitis in patients with what he called "rabbit fever." It was not until 1911, however, that the causative organism was first isolated by McCoy and Chapin,[2] who were investigating a disease of ground squirrels in Tulare county, California. The organism was named Bacillus tularense after the county where it was first discovered. Fourteen years later one of Martin's patients was found to have a positive agglutination test for tularemia.[1] In 1913 Vail[3] saw an unusual form of conjunctivitis and Wherry and Lamb,[4] working on this case, were the first to isolate Bacterium tularense in pure culture from a human being.

At first it was thought that rabbits alone were responsible for transmitting this disease to man, but it has since been shown that many rodents, rabbit ticks, wood ticks, deer flies, coyotes, hogs, quail, pheasants and other animals and birds are hosts and transmitters of this infection to man.[5]

After the discovery of a causative organism tularemia began to be recognized in many parts of the United States, Canada and Europe. Francis reviewed 679 cases in 1928,[6] and he classified them in four main groups, as follows: (1) the ulceroglandular form, occurring most frequently and characterized by an open ulceration, regional lymphadenopathy and severe systemic manifestations out of proportion to the local lesion; (2) the glandular form characterized by regional lymphadenopathy in which a primary lesion is not evident; (3) the typhoid form in which both a primary lesion and lymphadenopathy are absent but in which constitutional symptoms predominate, and (4) the oculoglandular form in which the primary lesion is a conjunctivitis. In this series 32 cases, or 4.7 per cent, were of the oculoglandular form.

In 1939 Oosting[7] noted that there had been 68 cases of oculoglandular tularemia recorded up to that time, and he reported another. In 1940 Foshay[8] reported 600 cases of all forms of tularemia, of which 11, or 1.8 per cent, were of the oculoglandular form. In his series the primary lesion was found in the conjunctiva less often than in any other location. Francis[9] reported 78 cases in the United States and 18 in foreign countries up to 1940. Since then 8 cases have been reported in the

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4. Wherry, W. B., and Lamb, B. H.: Infection of Man with Bacterium Tularense, J. Infect. Dis. **15:** 333, 1914.
5. Simpson, W. M.: Tularemia: A Summary of Recent Researches with a Consideration of One Hundred and Three Dayton Cases, Ohio State M. J. **29:** 35 (Jan.) 1933.
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7. Oosting, M.: Oculoglandular Tularemia Contracted from the Tree Squirrel, Ohio State M. J. **35:** 730 (July) 1939.
8. Foshay, L.: Tularemia, Medicine **19:** 1 (Feb.) 1940.
9. Francis, E.: Oculoglandular Tularemia, Arch. Ophth. **28:** 711 (Oct.) 1942.

literature by Thompson and Glynn,[10] Gorrell,[11] Last,[12] Guerry[13] and Siniscal.[14] These and our own case bring to a total of 87 the recorded instances of oculoglandular tularemia in the United States. Undoubtedly many others have not been reported and many more have gone unrecognized. Nevertheless this small number serves to emphasize how unusual this manifestation of tularemia is.

SYMPTOMATOLOGY

Symptoms may come on quickly after an incubation period of two to five days. First the eyelids begin to swell, and then the preauricular, the submaxillary, the anterior cervical lymph glands and, sometimes, the axillary nodes become decidedly swollen and tender. As a rule, one eye alone is involved. On everting the eyelid, a pronounced degree of inflammation of the conjunctiva is seen, usually confined to the lower lid. Scattered through the red conjunctiva are small yellow nodules. These soon break down and leave shallow yellow ulcers, which stand out in well defined contrast to their scarlet background. The number of ulcers varies from one to ten, averaging about six. The cornea is involved only in the severer cases. With the appearance of the ocular lesions, constitutional symptoms become decided. Fever, chills, severe sweats and general malaise and weakness are the rule.

In a series reported by Vail in 1929[1] the ocular symptoms lasted about four weeks, the febrile reaction one to six months and general weakness of an incapacitating nature for six months or longer. The neighboring lymph glands remained large for many months after the primary lesion had disappeared. Francis[6] reviewed a large number of cases of all forms of tularemia and found that there was complete weakness for one month, weakness on moderate exertion during the second month and ability to do half time work during the third month of the disease. Many patients did not return to normal strength for six to twelve months. During convalescence there may be recurrent attacks of fever, sweats, attacks of extreme weakness and recurrent glandular enlargement. These recurrences may themselves last six to twelve weeks. All workers comment on the extraordinary variability of this disease, the source of infection, the modes of transmission and the clinical manifestations.

DIAGNOSIS

In his excellent review Francis[6] has emphasized four points that should lead to the diagnosis of tularemia: (1) a history of having dressed or dissected a wild rabbit, or of being bitten by a tick or a fly; (2) a primary lesion, such as a papule, a persistent ulcer or a primary conjunctivitis, followed by conjunctival ulceration; (3) persistent enlargement of the neighboring lymph glands, and, (4) fever of two or three weeks' duration.

The diagnosis may be confirmed by an agglutination test of the patient's serum. The reliability of this test is almost absolute. Its use makes diagnosis possible with a degree of accuracy seldom found in medical practice. Agglutinins are usually absent until some time during the second week. There follows an abrupt rise in titer during the third week, reaching a maximum from the fourth to the seventh week. The titer then gradually falls, and agglutinins may remain in low concentrations indefinitely. Human tularemia serums may also cross agglutinate Brucella abortus and Brucella melitensis organisms. In such cases the titer of the latter organisms will be less than the titer of Pasteurella tularensis. Isolation of the organisms from the conjunctiva or from the blood is difficult and requires specially enriched mediums and animal inoculation. For early diagnosis there is available a bacterial suspension intradermal test, which becomes positive during the first week.[15]

COMPLICATIONS

Complications are unusual in this disease. Those most likely to occur are ulcerative and suppurative adenitis, ulceration of the cornea and acute, purulent dacryocystitis. Francis has reported a case of ulceration with perforation of the ocular conjunctiva followed by prolapse of the iris.[6]

MORTALITY

In 1936 Pessin[16] reported the general mortality of tularemia to be 4.8 per cent in 5,426 cases. Francis[6] found a mortality of 6.9 per cent in 15,525 cases of all types of tularemia, with a mortality of 9 per cent in 78 cases of oculoglandular tularemia.

TREATMENT

Many methods of treatment have been tried. The most effective of all has been treatment with serum, developed by Foshay.[8] Even here, however, the high morbidity rate leaves much to be desired. The sulfonamide compounds, arsenic compounds, iodides, metaphen, acriflavine and penicillin have all been used without benefit.[17] Zeiter[18] and Siniscal[14] reported comparatively favorable results with the use of fever therapy on a few patients. Jackson[19] has reported favorably on the use of a solution of bismuth tartrate intravenously.

In 1944 Heilman's[20] experiments showed that the antibiotic substance streptomycin possessed considerable activity against Past. tularensis, as measured by in vitro and in vivo experiments. Lethal infections were established in mice, all of whom recovered when treated with streptomycin. Control animals failed to recover from the disease.

These experiments led to the use of streptomycin in the treatment of tularemia in human beings. Foshay and Pasternack[21] described 7 cases with early favorable results in all. None of these patients, however, had the oculoglandular form of tularemia. The experiences of Foshay and Pasternack compared favorably with previous results when serum therapy was used. Abel[22] has also reported on the effectiveness of streptomycin in 3 cases.

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[10] Thompson, H. E., and Glynn, J. D.: Oculoglandular Tularemia, J. Iowa M. Soc. **30:** 70 (Feb.) 1940.

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[14] Siniscal, A. A.: Oculoglandular Tularemia, Am. J. Ophth. **29:** 698 (June) 1946.

[15] Foshay, L.: Tularemia: Accurate and Early Diagnosis by Means of the Intradermal Reaction, J. Infect. Dis. **51:** 286 (Sept.-Oct.) 1932.

[16] Pessin, W. B.: Tularemia: Etiology, Diagnosis and Treatment, Wisconsin M. J. **25:** 448 (June) 1936.

[17] Bell, J. F., and Kahn, O. B.: Efficacy of Certain Drugs in the Treatment of Tularemia, Arch. Int. Med. **75:** 155 (March) 1945. Josey, A. I.: Penicillin Treatment of a Case of Tularemia Without Effect, J. A. M. A. **126:** 496 (Oct. 21) 1944. Pullen, R. L., and Stuart, B. M.: Tularemia: Analysis of Two Hundred and Twenty-Five Cases, ibid. **129:** 145 (Oct. 13) 1945.

[18] Zeiter, W. J.: Tularemia Treated with Artificial Fever Therapy, Cleveland Clin. Quart. Rev. **6:** 295 (Oct.) 1939.

[19] Jackson, W. W.: The Treatment of Tularemia with Intravenous Bismuth Tartrate, Am. J. M. Sc. **209:** 513 (April) 1945.

[20] Heilman, F. R.: Streptomycin in the Treatment of Experimental Tularemia, Proc. Staff Meet., Mayo Clin. **19:** 553 (Nov. 29) 1944.

[21] Foshay, L., and Pasternack, A. B.: Streptomycin Treatment of Tularemia, J. A. M. A. **130:** 393 (Feb. 16) 1946.

The case of the oculoglandular type of tularemia reported here is of interest both because of its comparative rarity and because there has been no report up to the time of writing of the treatment of this disease with streptomycin.

REPORT OF A CASE

History.—A white boy aged 11 was hospitalized June 8, 1946, with swelling of his right eye of eight days' duration. Nine days previously his right eye had been struck by a stone. There was apparently no injury, as the incident was forgotten and he went in swimming later that day. The next day he complained of something in his eye, and the lids became swollen and reddened. His mother used eye washes of boric acid, and all discomfort disappeared. Seven days before admission, fever was noted. This persisted daily and was worse in the late afternoons than in the mornings. There were no chills, but there were severe sweats. The boy was kept in bed and except for mild generalized weakness and malaise had no complaints. The swelling about his eye gradually increased during this time. Family and past histories were noncontributory.

Physical Examination.—On admission the patient appeared to be a well developed and well nourished white boy, of good color and not in acute distress. The temperature by rectum was 104 F., the pulse rate was 100 and the respiratory rate 18. There was decided swelling and tenderness of the right eye. Both lids were edematous, and the palpebral conjunctivas were red and inflamed. On the lower right palpebral conjunctiva were scattered six small shallow irregular ulcers with yellowish bases. The bulbar conjunctiva appeared normal. The pupils were round, regular and equal and reacted to light and accommodation. The left eye appeared normal.

Examination of the ears, nose and throat revealed nothing except a mild pharyngitis. The chest was normal in appearance, size and shape. Resonance and breath sounds were normal, and adventitious sounds were not noted. Physical examination of the heart revealed no abnormality. The abdominal wall was soft, and there was no tenderness or rigidity. The spleen and liver were not palpated, nor were any other abdominal organs or masses palpable. The nervous system was normal. Skin and tendon reflexes were present and equal, and there was no evidence of meningeal irritation. The cranial nerves were normal.

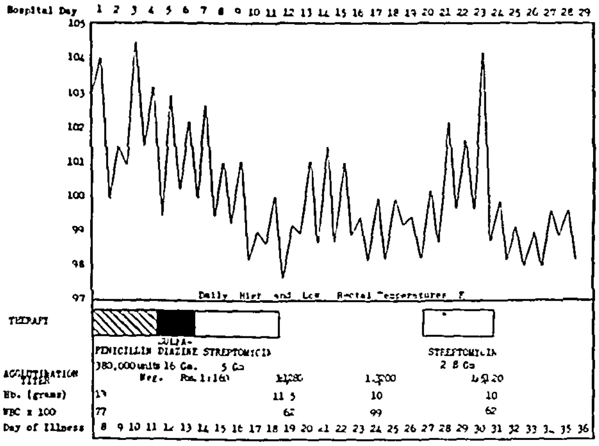
The right preauricular and submaxillary lymph glands were grossly enlarged and tender. All the lymph glands of the right anterior cervical group were likewise abnormally enlarged. Two large nodes were palpated in the right axilla. Throughout the rest of the body the lymph glands were normal in size and consistency.

Laboratory Examination.—Examination of the blood revealed a white cell count of 7,700, with 79 per cent polymorphonuclear leukocytes, 19 per cent lymphocytes and 2 per cent monocytes. The red cell count was 4,250,000, with a hemoglobin level of 13 Gm. per hundred cubic centimeters (Haden). Urinalysis, Kahn and Kline tests, and tuberculin tests were negative. Blood culture and culture from material on the palpebral conjunctiva were negative. These were planted only on routine mediums.

Course.—Penicillin therapy, 20,000 units at three hour intervals intramuscularly, was commenced. After three days the eye appeared to be worse. New conjunctival ulcers were forming, and the ocular conjunctiva was becoming involved. Further inquiry revealed that sixteen days before admission, while he was playing in the woods with another boy, our patient had found a dead rabbit. He handled the rabbit and carried it for a short distance. Later he was a close and interested bystander while his older playmate proceeded to dissect the animal. His playmate was wearing gloves at the time. The incident had already been forgotten and, of course, had not been considered significant by the parents.

With this knowledge, serum agglutination tests for tularemia, undulant fever and typhoid were commenced, and penicillin therapy was discontinued. Sulfadiazine therapy was initiated. The following day all agglutination tests were negative, but it was nevertheless felt that our patient did present the clinical picture of oculoglandular tularemia. A request for streptomycin was made to Dr. Chester S. Keefer, who generously arranged to have a supply sent to us. Before the streptomycin arrived no appreciable effect of therapy with sulfadiazine was noted. Streptomycin therapy was started late on the sixth hospital day and the drug was administered as directed, 1 Gm. daily dissolved in isotonic sodium chloride solution and given in divided doses every three hours intramuscularly for five days (1,000,000 units daily divided into eight doses of 125,000 units each). We were gratified to find that an agglutination test for tularemia was now positive in a dilution of 1 : 160, confirming our diagnosis.

The clinical response to therapy with streptomycin was striking. After twenty-four hours the edema was less and all tenderness had disappeared from the eye and regional lymph glands. As seen in the accompanying chart, the temperature began to fall after twenty-four hours, reaching a normal level on the fourth day of therapy. After forty-eight hours the ocular conjunctiva had considerably improved, and swelling about the face and regional lymph glands was much reduced. Improvement proceeded so that after five days of therapy the only remaining evidence of disease was a mild palpebral conjunctivitis and small palpable lymph glands in the anterior cervical, axillary and preauricular groups.



Clinical course of boy aged 11, weighing 32.7 Kg., admitted to hospital June 8, 1946 with oculoglandular tularemia and discharged July 6, 1946

A serum agglutination test for tularemia at this time was positive in a 1 : 1,280 dilution. The agglutination for Br. abortus was positive in a 1 : 40 dilution. Throughout the treatment period the patient was observed for possible toxic effects of streptomycin, but untoward effects were not noted.

After streptomycin therapy was discontinued there began again a gradual daily rise in temperature to levels of 100 and 101 F. The general condition of the patient and the local appearance of the conjunctiva remained good and except for fever there was no sign of illness or disability. In order to forestall a long-drawn-out convalescence, a second lot of streptomycin was generously sent to us from another company, and treatment was started again on the twentieth day. The dosage and method of administration was the same as with the first course. This time, however, there was much pain and tenderness at the sites of injection, and on the twenty-first day the temperature rose to 102.4 F. This continued until the twenty-second and twenty-third days, when the temperature was 104 F. The administration of streptomycin was discontinued, since there was no other apparent cause for this fever, and the temperature immediately returned to normal and remained so for six days, after which our patient was discharged from the hospital. No other untoward effects that could be attributed to the drug were noted. At this time physical examination revealed an eye that was normal in all respects and a boy whose color was good and who was full of pep and energy, revealing no evidence of weakness or tiredness.

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[22] Abel, O., Jr.: The Use of Streptomycin in Tularemia, J. Missouri M. A. 43: 167 (March) 1946.

During the last few weeks in the hospital a gradually rising agglutination titer was observed. On the seventeenth hospital day, it was 1:3,200 for Past. tularensis and 1:80 for Br. abortus. On the twenty-fourth day it was 1:5,120 for Past. tularensis and 1:80 for Br. abortus. Shortly before discharge the hemoglobin content of his blood had fallen to 10 Gm. per hundred cubic centimeters, and the red blood cell count was 3,530,000. Examination of the blood revealed otherwise normal conditions.

Following discharge the boy was observed again at intervals during the next three months. His eye and his general condition remained normal during this period.

COMMENT

The first course of streptomycin produced gratifying results. This was similar to the observations of others.[23] The early relapse in our patient was not accompanied by the usual constitutional symptoms. He appeared and felt perfectly well during the entire febrile period. There was, in fact, difficulty in keeping him in bed and in persuading his parents that he was not well. The sharp sudden rise in temperature which accompanied the second course of treatment and its immediate subsidence after the drug was discontinued can evidently be attributed to the streptomycin rather than to the disease process. Either the second lot of streptomycin received was not as pure a product as the first or the patient had by this time become sensitized to the drug. The latter seems likely, since an apparent sensitization to streptomycin with violent febrile reactions during a second course of therapy has also been observed by Hinshaw and Feldman.[24]

There was no question in our minds, however, that the first course of therapy was responsible for rapid improvement in the primary lesion, the fever and the constitutional symptoms. The absence of fever during the patient's convalescence must also be attributed to the effect of streptomycin therapy.

In evaluating the effects of serum therapy, Foshay found that in 518 untreated cases, the average duration of disease was 3.8 months, the average disability was 3.36 months, fever 31.59 days and duration of the primary lesion 39.48 days. In our patient the duration of disease was 30 days, fever 30 days and the primary lesion 17 days. These figures compare favorably with those for untreated cases, as well as with Foshay's figures for 600 patients who received specific serum therapy.[8] On this basis at least it appears that streptomycin did favorably alter the expected course of the disease in our patient.

It is quite apparent that streptomycin has been in use for too short a period to properly evaluate its effectiveness in the treatment of human tularemia. Every indication at the present time suggests that it is a decided improvement over other forms of therapy. Future investigation may alter present methods of administration and dosage and improve further the therapeutic effect of the drug. It is certainly desirable to observe the results of more intensive and prolonged therapy in large numbers of patients before forming definite conclusions as to what results may ultimately be expected in the treatment of a disease that is naturally so variable.

SUMMARY AND CONCLUSIONS

A case of oculoglandular tularemia is presented together with a brief review of the literature. This is an unusual manifestation of tularemia and probably the first to be treated with streptomycin. There was immediate and dramatic improvement of the primary lesion, constitutional symptoms and fever, but the general course of the disease, as manifested by a return of low grade fever, was prolonged for thirty days. During convalescence a second course of streptomycin brought about symptoms which probably represented either sensitivity of our patient to streptomycin or an impurity in the drug. The course of the disease was shorter in all respects than that of the average untreated case.

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[23] Foshay and Pasternack.[21] Abel.[22]

[24] Hinshaw, H. C., and Feldman, W. H.: Streptomycin in Treatment of Clinical Tuberculosis: A Preliminary Report, Proc. Staff Meet., Mayo Clin. **20**: 313 (Sept. 5) 1945.

IMMUNIZATION PROCEDURES IN PEDIATRICS

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It is the purpose of this paper to recommend certain preparations for active immunization against smallpox, diphtheria, tetanus and pertussis. These procedures have universal application to the practice of pediatrics. Active immunization against typhoid fever and scarlet fever will not be discussed in as much as it is necessary or advisable only within certain geographic limits. The recommendations made here are based on a review of the literature[1] biased, no doubt, by my own experience in pediatric immunity clinics. I will also briefly summarize results of a study of combined immunization with a mixture of diphtheria and tetanus toxoid containing Hemophilus pertussis vaccine.

SMALLPOX

Calf lymph virus has yet to be excelled as the preparation of choice for vaccination against smallpox. Failures are due to nonpotent lymph. The preservation of the vaccine at temperatures below 50 F. at all times and preferably in an electric refrigerator is essential to the maintenance of potency. Vaccination should always be on the arm or between the shoulder blades. Secondary infections are more likely to occur on the leg. The multiple pressure method should be used. A light sterile gauze dressing loosely applied is desirable to prevent fingernails from contact with the area. Vaccination may be performed at any time during the first year of life. During the first four months, however, occasional refractory persons are met with. Eczema is a positive contraindication. Revaccination should be done when the child starts to school.

From the Department of Pediatrics, Stanford University School of Medicine.

Read before the Section on Pediatrics at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 4, 1946.

[1] Report of the Committee on Therapeutic Procedures for Acute Infectious Diseases and on Biologicals of the American Academy of Pediatrics, Evanston, Ill., 1945. The Control of Communicable Diseases, ed. 6, American Public Health Association, New York, 1945. Toomey, J. A.: *Active Immunity*, J. A. M. A. **119**: 18 (May 2) 1942.

DIPHTHERIA

Fortunately in this country there have not been any epidemics of malignant diphtheria. This being so the various types of diphtheria toxoid used in this country have not been subjected to the crucial test. In judging the products available one can only rely on tests of immunity.

Immunity in diphtheria is primarily antitoxic. It is the sum of existing circulating antitoxin and the capacity to manufacture more antitoxin rapidly on the slightest secondary stimulus. Existing circulating antitoxin can be measured by neutralization tests in laboratory animals. Capacity to react can be measured by a second determination after a reinjection. The Schick test not only measures the amount of antitoxin available at the site of injection but also the reactive capacity. For example, in previously immunized persons the injected Schick toxin may stimulate antitoxin rapidly enough to partially neutralize itself before injury occurs to the tissues and erythema results.[2] A Schick test thus serves incidentally as a small booster injection. Even though reports of malignant diphtheria in Schick-negative persons are now coming in, they are the exception rather than the rule. Comparison of antigens by means of the Schick conversion rate is valid. Furthermore, in the individual case in private practice the Schick test enables one to pick up the occasional poor reactor, provided that the test is performed more than three months after immunization.

Basic immunization should be performed during the first two years of life and, to be conservative, probably not before the eighth month, though recent evidence suggests that younger infants can be immunized. There is incontrovertible evidence, provided by the classic studies of Volk and Bunney,[3] that two injections of alum precipitated diphtheria toxoid provide a basic immunity slightly higher in degree and of longer duration than do three injections of fluid toxoid. The argument against alum precipitated toxoids, namely, the occasional formation of sterile abscess, has been practically nullified by improvement in the product. The injections should be given deeply and, in my opinion, intramuscularly, as Bousfield advises.[4] The interval between the injections should be one to three months. In the presence of an epidemic, this may be shortened to three weeks.

Fluid toxoid, three injections at monthly intervals, is second best and, as such, is not the agent of choice, at least in primary immunization. Fluid toxoid, however, is preferable in older age groups.[5] It should be used in exceedingly small doses, or suitably diluted, in those children who are sensitive to diphtheria bacillary protein. Sensitivity is determined by the intradermal injection of a 1 : 100 dilution of fluid toxoid. This test, known as the Moloney test,[6] is essential before primary or secondary immunization in persons 10 years of age or more. (I hope Dr. Thelander will discuss immunization in the older age groups from her large experience.)

There remains to be mentioned aluminum hydroxide adsorbed diphtheria toxoid. This has been used for years abroad.[7] In the remote community of Iceland, where only 10 per cent of the children under 13 years of age were naturally Schick negative, Sigurjonsson obtained 96 per cent Schick negative reactions seven months after two injections of this product at a three week interval. Four years later 74 per cent were still Schick negative. This is rather remarkable. In my own experience with aluminum hydroxide adsorbed toxoid, during the past four years at Stanford, I have yet to observe an injected child with a positive Schick test.

A fourth type of diphtheria toxoid, protamine-precipitated toxoid, has been reported recently. Antitoxin titers in a large group of children were unusually high.[8]

In conclusion, then, for basic immunity the conservative pediatrician should stand by alum precipitated toxoid. The more experimentally minded may with justification use the aluminum hydroxide adsorbed product.

When the child is 5 or 6 years of age and ready for kindergarten or school, should one perform a Schick test or simply give a booster injection? The public health physicians are warranted in omitting the Schick test and giving one reimmunizing injection.[9] In private practice, however, it is my belief that one should perform a Schick test, controlling it with a 1 : 100 dilution of toxoid.[10] If the test is negative, one need do no more. The toxin, and especially the diluted toxoid have served as little boosters. If the test is positive, two reinjections of alum precipitated toxoid should be given. The diluted toxoid control will have identified the few persons sensitive to diphtheria protein and thus enable the physician to proceed cautiously with reinjections.

TETANUS

Immunization against tetanus is quite a different problem from that against diphtheria. There are no naturally immune persons. Tetanus antitoxin has never been detected in nonimmunized men, except in China,[11] nor has it been found even after recovery from clinical tetanus.[12] Although tetanus spores are ubiquitous, they are of course not antigenic and, unlike the diphtheria bacilli in the street cars, they cannot restimulate the immunity mechanism. Only the toxin produced by the bacillary forms under anaerobic conditions is antigenic and then but feebly so.[13] Boyd [14] has attributed the 22 cases of tetanus which occurred in the immunized British forces to an inadequate level of circulating antitoxin.

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[4] Bousfield, G.: Diphtheria Alum Precipitated Toxoid, Brit. M. J. **2**: 706 (Dec. 4) 1943.

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[9] Footnotes 3 and 5.

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[11] Tenbroeck, C., and Bauer, J. H.: Studies on the Relation of Tetanus Bacilli in the Digestive Tract to Tetanus Antitoxin in the Blood, J. Exper. Med. **37**: 479, 1923.

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[13] Zuger, B.; Greenwald, C. K., and Gerber, H.: Tetanus Immunization: Effectiveness of the Stimulating Dose of Toxoid Under Conditions of Infection, J. Immunol. **44**: 309, 1942.

[14] Boyd, J. S. K.: Tetanus in the African and European Theatres of War, 1939-45, Lancet **1**: 113, 1946.

The aim in tetanus immunization, then, is to attain and maintain the highest degree of immunity at all times. After studying the initial lesions in 56 cases of clinical tetanus in children, Pratt[15] concluded that reduction in the incidence of this disease can only be accomplished if this aim is kept in view. The majority of his cases resulted from trauma or infection so trivial that they were overlooked either by the child himself, his parents or his physician. It is not plausible to expect parents to bring children into the office for a booster injection after each scratch. Antitoxic immunity, of itself protective without reliance on restimulation, is therefore the goal.

A great deal of evidence[16] has accumulated to indicate that alum precipitated tetanus toxoid produces a more durable immunity than plain or fluid toxoid. Two injections are usually advised, but three injections[17] are preferable. The interval should be three months. The first two injections may be combined with diphtheria toxoid. With this dosage the great majority of children will produce and maintain more than 0.1 unit of tetanus antitoxin per cubic centimeter of serum for one year. One tenth of a unit of tetanus antitoxin is believed to be protective of itself against such toxin as may be produced in trivial wounds.

Aluminum hydroxide adsorbed tetanus toxoid, alone or in combination with other antigens, may in the future equal or surpass the alum precipitated product as the agent of choice. Local reactions are less frequently encountered. Antitoxin levels produced are high and remarkably well maintained.[18]

A booster injection of 0.5 cc. alum precipitated tetanus toxoid should always be given one year after completion of the basic course. Thereafter reinjections should be repeated every two years. Annual reinjections with 0.25 cc. are more easily remembered. They can be given regularly at the time of the child's annual physical examination.

This schedule for immunization of course will be interrupted if the child is brought in to the office with an abrasion or anything more serious. A booster injection should then be given immediately. As 1 cc. fluid toxoid will raise the child's antitoxin titer more promptly than alum precipitated toxoid,[19] it is here the agent of choice. The minimum recorded incubation period of tetanus is as short as two days,[14] but incubation periods of less than seven days are rare. A booster injection cannot be expected to be of any value against such fulminating intoxication. The level of circulating antitoxin resulting from the child's previous injections of toxoid will be decisive. This level, however, can be temporarily increased by administering tetanus antitoxin (horse serum). In fact, resort to this old procedure is indicated, by no means contraindicated, in cases with extensive contaminated wounds. The recall injection of toxoid is injected *simultaneously* into another extremity.

PERTUSSIS

The effectiveness of active immunization against pertussis has been proved by numerous studies in the field.[20] Occasional unfavorable reports can be accounted for by the use of nonpotent lots of vaccine. There is yet no United States standard of potency because there is no officially accepted means of assaying potency. Soon this may be remedied. Until then occasional nonpotent lots of vaccine may continue to appear from the best available sources. However, it must be admitted at once that in pertussis vaccine one does not have as almost universally potent an antigen as is available in either diphtheria or tetanus toxoid. Speaking conservatively, the total mass of evidence from field studies in different parts of the country indicates that H. pertussis vaccine will completely protect 2 of 3 children exposed in the family and 4 of 5 children exposed less intensely outside the home. Those vaccinated children who do contract pertussis usually have milder attacks and rarely die. Some apparent failures of immunization in vaccinated children are due to infections with the Bacillus parapertussis.[21] These infections will seldom be diagnosed correctly, as the cough is clinically indistinguishable from that of pertussis: in other words they are cases of whooping cough but not of pertussis.

The protective value of H. pertussis vaccines was proved in the field with simple saline suspensions of bacilli in the antigenic phase 1. All freshly isolated strains are in phase 1. Unless special precautions are taken, stock cultures will change into relatively nonantigenic phases. When saline suspensions are used the total number of bacterial cells injected should be at least 70 billion. Ninety to 120 billion cells are better. This total dose is divided into three injections and given preferably at three or four week intervals.[22] One week intervals, however, should be used during an epidemic. Suspensions containing 15 and 20 billion cells per cubic centimeter are, in my experience, less likely to provoke local reactions than more concentrated suspensions.

Again, as with the toxoids, an alum precipitated product is to be considered. Field studies and serologic evidence[23] indicate that 30 or 40 billion H. pertussis in the presence of alum are as effective as 80 to 100 billion bacterial cells in saline solution. Three injections of a fraction of a cubic centimeter each are given at monthly intervals. In my opinion, however, the superiority of the alum precipitated vaccine has not been demonstrated in the age groups customarily immunized—that is, in infants aged 5 months or older. Unless combined immunization with alum precipitated toxoids, that is, a mixture, is to be used, I prefer to give the vaccine in saline solution in order to minimize local reactions.

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[15] Pratt, E. L.: Clinical Tetanus, J. A. M. A. **129:** 1243 (Dec. 29) 1945.

[16] Bergey, D. H.: Active Immunization Against Tetanus Infection with Tetanus Toxoid, J. Infect. Dis. **55:** 72, 1934. Jones, F. G., and Moss, J. M.: The Antitoxic Titer of Human Subjects Following Immunization with Tetanus Toxoid and Tetanus Alum Precipitated Toxoid, J. Immunol. **30:** 115, 1936. Jordan, E. P., a [illegible] Toxoid for Prophylaxis, War Med. **1:** 227 (C [illegible] L. R.: Tetanus Toxoid Immunization, Mil. [illegible] Miller, J. J., and Saito, T. M.: Concurrent [illegible] anus, Diphtheria and Pertussis, J. Pediat. **21:** 31, 1942.

[17] (*a*) Bigler, J. A., and Werner, M.: Active Immunization Against Tetanus and Diphtheria in Infants and Children, J. A. M. A. **116:** 2355 (May 24) 1941. (*b*) Yeazell, L. A., and Deamer, W. C.: Response to a Stimulating Injection of Tetanus Toxoid, Am. J. Dis. Child. **66:** 132 (Aug.) 1943. (*c*) Miller, J. J., and Humber, J. B.: Observations on Tetanus Immunization: The Dosage of Alum Precipitated Toxoid and the Use of Fluid Toxoid After Trauma, J. Pediat. **23:** 516, 1943

[18] Miller, J. J.; Humber, J. B., and Dowrie, J. O.: Immunization with Combined Diphtheria and Tetanus Toxoids (Aluminum Hydroxide Adsorbed) Containing H. Pertussis Vaccine, J. Pediat. **24:** 281, 1944.

[19] Evans, D. G.: Active Immunization Against Tetanus, Lancet **2:** 628, 1941. Miller and Humber.[17c]

[20] Felton, H. M., and Willard, C. Y.: Current Status of Prophylaxis by Hemophilus Pertussis Vaccine, J. A. M. A. **126:** 294 (Sept. 30) 1944.

[21] Eldering, G., and Kendrick, P.: Bacillus Para-Pertussis, J. Bact. **35:** 561, 1938. Bradford, W. L., and Slavin, B.: An Organism Resembling Hemophilus Pertussis, Am. J. Pub. Health **27:** 1277, 1937. Miller, J. J.; Saito, T. M., and Silverberg, R. J.: Parapertussis, J. Pediat. **19:** 229, 1941.

[22] (*a*) Sauer, L. W.: Whooping Cough, *in* Brennemann, J.: Practice of Pediatrics, edited by I. MacQuarrie, Hagerstown, Md., W. F. Prior Company, 1945, vol. 2, chap. 34. (*b*) Lapin, J. H.: Whooping Cough, Springfield, Ill., Charles C Thomas, 1943.

[23] (*a*) Daughtry-Denmark, L.: Whooping Cough Vaccine, Am. J. Dis. Child. **63:** 453 (March) 1942. (*b*) Kendrick, P. L.: A Field Study of Alum-Precipitated Combined Pertussis Vaccine and Diphtheria Toxoid for Active Immunization, Am. J. Hyg. **38:** 193, 1943. (*c*) Sauer.[22a]

This brings up the question of how early in life an infant can be actively immunized. Using an alum precipitated vaccine, Sako and his co-workers[24] in New Orleans conclusively demonstrated that injections begun between 1 and 2 months of age and repeated twice at monthly intervals (total dose 40 billion organisms), protected 81 per cent of infants against familial exposure. More important, none of their immunized infants who were attacked died This well controlled field study was extremely important in that it opened the way for trials of active immunization during earliest infancy. Now, not only immunization against pertussis but against typhoid, diphtheria and tetanus is being attempted at an age at which it was formerly believed that the immunity mechanism was undeveloped. The evidence available[25] suggests that plain vaccine may possibly be less effective than alum precipitated vaccine in infants under 3 months of age

There are on the market soluble antigens and endotoxoids of H. pertussis. The available evidence[26] indicates that they are of little or no prophylactic value. Only suspensions of whole cells in saline solution or with some adsorbent like alum should be used.

Complete protection against pertussis of ten years' duration may result in some persons from the primary course of immunization. Reinjections of vaccine, however, should be the rule. Whenever the child is known to have been intimately exposed a stimulating dose of 20 billion cells should be given.[27] Otherwise, in my experience, two reinjections with this dose (20 billion), the first about a year after the basic course and the second at the age of 6 years, are sufficient.

MIXED TOXOIDS AND VACCINES

It is apparent that if it is necessary to employ all the immunizing procedures to which I have alluded, the children's arms will resemble pin cushions. Mixtures of antigens will save the physician's time and the child's extremities, not to mention his tears. Ramon[28] challenged the classic German concept of "competition of antigens" and demonstrated clearly that mixtures of bacterial vaccines and toxoids might be used. Furthermore, he showed that the immune response to the toxoids, that is, antitoxin production, was potentiated thereby. Such multiple antigens, usually incorporating typhoid vaccine, have been employed by the French Public Health officials for more than ten years. In 1936 Bordet, the discoverer of the pertussis bacillus, reported favorably on a mixture of pertussis vaccine and diphtheria toxoid.[29] More recently reports on mixed immunization have appeared in this country.[30]

In 1941 a trial of combined immunization was begun in the Children's Clinic at Stanford. A mixture of aluminum hydroxide adsorbed diphtheria and tetanus toxoids containing twenty billion H. pertussis per cubic centimeter was used.[31] Only two injections of 1 cc. each were given. An interval of three months was used. Table 1 details the results of the serologic observations. The determinations here recorded apply only to children who should have but did not have any reinjections of any kind. Hence the antitoxin and antibody levels indicate the serologic immunity following the basic course of only two injections plus the slight added stimulus of a Schick test six months after the basic course.

It is apparent from the table that a satisfactory immune response was obtained with respect to diphtheria. Although the numbers are small the persisting uniform Schick negativity is gratifying. The tetanus antitoxin produced is rather remarkable. To my knowledge uniform levels of 0.1 unit or more after two and a half years have not been previously described. (This study will be reported in more detail elsewhere.) On the other hand, the pertussis agglutination titers are not satisfactory. In my experience children carrying

TABLE 1.—*Schick Tests, Tetanus Antitoxin Determinations and Pertussis Agglutination Reactions in Children Who Received Two Injections of Combined Antigens*

	Interval After Second Injection		
	3 to 6 Mo	7 to 13 Mo	2½ to 3¾ Yrs
Negative Schick tests	114	.	24
Positive Schick tests	0	..	0
Tetanus antitoxin			
0 1 U /Cc. or more	86	72	34
Less than 0 1 U./Cc	1	1	0
H pertussis agglutinins			
Present in dilution of			
1:320 or higher	52	41	8
1:160 or lower	18	21	10
Absent	0	4	4

Each injection of combined diphtheria pertussis tetanus antigens, aluminum hydroxide adsorbed ("D P T Alhydrox," Cutter Laboratories), equals 1 cc; the interval equals three months.

TABLE 2—*A Conservative Schedule for Office Immunization Procedures Planned to Obtain Optimal Time Relationships for Basic Courses and Reinjections*

Age	Injection
6 mo	H. pertussis vaccine
7 mo.	H pertussis vaccine
8 mo	Mixed diphtheria and tetanus toxoids containing H pertussis vaccine
10 mo	Smallpox vaccine
1 yr	Mixed diphtheria and tetanus toxoids
15 mo	Tetanus toxoid; Schick test
18 mo	H pertussis vaccine
2 yrs	Tetanus toxoid
4 yrs	Tetanus toxoid
6 yrs	Smallpox vaccine; H pertussis vaccine; Schick test; tetanus toxoid
Thereafter continue tetanus toxoid every 2 yrs	

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[24] (a) Sako, W, Treuting, W L, Witt, D B, and Nichamin, S J Early Immunization Against Pertussis with Alum Precipitated Vaccine, J. A M A **127:** 379 (Feb 17) 1945. (b) Sako, W.. Studies on Pertussis Immunization, J. Pediat **30:** 29, 1947

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[26] Singer Brooks, C.: Pertussis Prophylaxis, J. A M. A **114:** 1734 (May 4) 1940. Cravitz, L, and Cauley, J H.: Pertussis Immunization Program of the Boston Health Department, ibid **129:** 539 (Oct 20) 1945

[27] Shaw, E B. The Prevention of Pertussis by the Use of Bacterial Vaccines, J. Pediat. **17:** 414, 1940. Lapin, J. H.: The Stimulation Dose in Whooping Cough, ibid. **20:** 18, 1942.

[28] Ramon, G: Mixed Vaccinations, Internat. Clin **1:** 241, 1939

[29] Bordet, J, cited by Ramon[28]

[30] Simon, H., and Craster, C V: Simultaneous Immunization with Combined Diphtheria Whooping Cough Vaccine, J. M Soc New Jersey **38:** 461, 1941 Kendrick[23b] Daughtry-Denmark[23a] Sauer, L W; Tucker, W H, and Markley, E Immunity Responses to Mixtures of Diphtheria Toxoid and Pertussis Vaccine, J A M A. **125:** 949 (Aug. 5) 1944. Lapin, J H: Mixed Immunization in Infancy and Childhood, J Pediat. **22:** 439, 1943. Miller and others[15] Hamilton, P. M, and Knouf, E. G.: Combined Immunization Against Diphtheria, Tetanus and Pertussis, J Pediat. **25:** 236, 1944.

[31] Supplied by Cutter Laboratories

agglutinin in high titer (1:320 or more) are protected.[32] With lower titers they may or may not be. The levels here found are inferior to those observed in the past following 80 billion H. pertussis in isotonic solution of sodium chloride. Furthermore, 2 children in this group were reported to have had whooping cough.

In the light of the above observations the clinic immunization schedule has been modified by the insertion of a dose of pertussis vaccine midway between the two triple antigen injections.

Some such schedule of combined immunization is of particular value in public health quarters and in crowded dispensaries. In private practice the use of mixtures may often be found a convenience. Their principal disadvantage is not the slightly more pronounced local reactions but the difficulty involved in obtaining the optimal interval for each ingredient in the mixture. In private practice optimal time relationships need not be compromised when the child is being examined monthly. A conservative schedule for office immunization procedures is submitted in table 2. This schedule is based on my conclusions as to optimal time relationships for basic courses and reinjections.

CONCLUSIONS

For primary (basic) active immunization of infants the following preparations are recommended: against smallpox, calf lymph virus; against diphtheria and tetanus, alum precipitated toxoids or aluminum hydroxide adsorbed toxoids, and against pertussis, phase 1 H. pertussis vaccine in isotonic solution of sodium chloride or alum precipitated.

Frequent reinjections of tetanus toxoid are obligatory to maintain immunity. Reinjections of pertussis vaccine and diphtheria toxoid are important, as is also smallpox revaccination.

Combined immunization with mixtures of toxoids and H. pertussis vaccine is valuable in public health and dispensary practice. Combined immunization may often be a convenience in private practice.

ABSTRACTS OF DISCUSSION

Dr. Hulda E. Thelander, San Francisco: Although considerable attention is given to the immunizing agent little is given to the host or recipient of immunization, who probably is more variable than is the agent used. It is generally recognized that characteristics of the human race such as height, weight and intelligence quotient vary widely; when persons are arranged according to their measurements they will fall into typical variability curves. Immunity, or the capacity to be immunized, however, is an intangible characteristic which does not lend itself to easy measurement. Years ago, in the study of antitoxin levels after immunization it was considered that it would be desirable to demonstrate graphically that immunity, like other factors, showed variability. Difficulty arose, however, when the figures spread from 0.005 unit to 50 units per cubic centimeter of serum. Finally, by arranging the figures by multiples of ten, it was possible to plot a variability curve. The children were immunized by one of the standard methods, but the adults were given 0.1, 0.2 and 0.2 cc. at two week intervals, and severe reactors were continued at 0.1 cc. instead of increasing the immunization dosage to 0.2 cc. The curves for children and adults were similar. The object lessons derived from the study were two: first, that the relatively few persons who resist immunization are the ones to whom special attention must be given, such as larger doses, more injections and frequent boosters; second, that it is unnecessary to subject the majority of adults to the undesirable effects of large doses of toxoid, since most persons immunize as well with much smaller doses.

Dr. Alfred E. Fischer, New York: Every pediatrician must look forward to the time when his young patients will no longer scream with terror when they approach his office. The earlier age of injection and a decrease in the number of injections will go far to make the practice of pediatrics more tolerable. The morbidity rate for pertussis indicates the need for early immunization. Until recently it had been assumed, largely from animal experimentation, that the young infant was unable to produce antibodies effectively. Then Sako showed that if adequate amounts of phase I pertussis organisms were injected a good agglutination titer could be obtained in infants 4 to 8 weeks old. Moreover, his clinical results were satisfactory; fewer of the injected infants contracted pertussis on subsequent exposure than did controls. Furthermore, the immune response persisted. Recently Peterson, in as yet unpublished experiments, showed that infants less than 3 months of age produced adequate antibodies against pertussis and tetanus. On the other hand, the antitoxin level produced against diphtheria was not as high as that produced in older infants. Several groups of workers in New York are studying different combinations of antigens in various age groups. From the data at hand, one cannot as yet recommend a standardized procedure using triple antigens, that is pertussis, diphtheria and tetanus Needs might vary in different communities and even in the same community from year to year. Since there has been only 1 infant less than 6 months of age with diphtheria, and only 9 under 1 year of age at Willard Parker Hospital in the past seven years, there is no necessity for extremely early immunization against this disease in New York at present. Nor is tetanus immunization important in the young infant in this city; however, since it can be combined so readily with the diphtheria injection, one may as well administer the two toxoids together. Since active immunity tends to weaken after a time, the administration of a stimulating dose of antigen should become a well established procedure. The triple antigen in doses of 0.2 or 0.3 cc. would seem to be excellent for this purpose in a previously immunized infant, one year after basic immunization, as Dr. Miller has suggested, and perhaps every two years thereafter. A suggested immunization schedule is as follows: 4 months of age, smallpox vaccination (spring or fall); 5 months, first pertussis; 6 months, diphtheria—tetanus—pertussis; 7 months, diphtheria—tetanus—pertussis; 8 months, smallpox vaccination, if not done at 4 months; 9 months, diphtheria and tetanus; 14 months, Schick test; 2 years, diphtheria—tetanus—pertussis (stimulating injection); and two or three years later, a stimulating injection. Young infants tolerate smallpox vaccination well, so I can see no objection to vaccinating a healthy infant at 3 or 4 months of age except in extremely cold or hot weather. Early pertussis immunization is desirable, so the first of such injections can be started at 5 months of age.

Dr. John A. Toomey, Cleveland: I am chairman of that committee. Members of the committee are scattered over the United States, and there exist many different opinions about any procedure, however simple. Frequently, the committee has to stay put for a period of time before it can get even a semblance of agreement on a particular point. Consequently, the official opinion of the committee must of necessity lag a little behind the more decided advances suggested by Drs. Miller and Thelander. An opinion given by the committee must be on a point which is tried and universally accepted. That doesn't mean to say that the opinion is always right. For the past two years I have been on a national committee that has been studying the effect of multiple antigens. It first used five antigens. I won't go into this report because it is to be published later by the committee as a whole, but I will give the general substance of it. Five antigens were tried, including typhoid, scarlet fever and the three antigens reported on this morning. The reactions were severe, and even the persons on whom the antigens were tried, patients in an epileptic and mental institution, even those patients complained. Subsequently, it was found that the scarlet fever antigen was causing the trouble. The three antigens suggested by Drs. Miller and Thelander, tetanus, diphtheria and pertussis, have been tried by a national committee; after two years' work, their results will be reported by this committee at the American Public Health Conference in November, 1946. I agree with Dr. Thelander that there is no reason why adults should be immunized, especially against diphtheria, and also I agree with her that adults can be immunized with extremely small doses. There is some objection to the routine use of tetanus antigens. Two members of the committee of which I am chairman do not believe that it should even be used, but the majority feel that there is no objection to the use of the three antigens. I wondered if Dr. Miller could give some information as to whether he uses combinations in the subsequent booster dose. For instance, if he used the triple antigen and then subsequently has a child exposed to tetanus, will he give a booster injection of an antigen composed of two materials (diphtheria and tetanus) or will he use a single antigen, that is, a tetanus antigen? It has been said by some that when the mixed antigens have been used in the booster dose there have been a few reactions of an anaphylactic nature. I would like to ask him about that.

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[32] Miller, J. J.; Silverberg, R. J.; Saito, T. M., and Humber, J. B.: An Agglutinative Reaction for H. Pertussis: Its Relation to Clinical Immunity, J. Pediat. 22: 644, 1943. Sako and others.[24]

DR. ERNEST WOLF, San Francisco: Whereas it is desired to prevent disease in childhood, one should at the same time be extremely careful that the relation between patient and physician also be saved. I make a great plea to all who make those schedules to minimize the number of injections necessary between the sixth and eighteenth month. At this age children are easily upset and are very much aware of what is done to them. Should it be proved that measures taken in the first four or five months give sufficient immunity to prevent later troubles, this would be the period of choice from the point of view of mental hygiene and patient-physician relations. When I see Dr. Miller's schedule of seven injections for infants between 7 and 15 months of age, I am a little afraid that pediatricians will have still more howling in their offices.

DR. JOHN MILLER JR., San Francisco: In answer to Dr. Toomey's question What agents are used for booster injections? circumstances dictate the choice. If a child is brought in with a wound, he is injected with 1.0 cc. of fluid tetanus toxoid regardless of the type of tetanus toxoid he received in the past. If a child has been exposed to whooping cough a booster injection of 20 billion H. pertussis organisms in isotonic solution of sodium chloride is given. As speed in raising antitoxin or antibody titer is desired, adsorbed preparations are not the agents of choice. On the other hand, for routine reinjections at 6 years of age a mixture of antigens is employed. H. pertussis vaccine mixed in the syringe with adsorbed tetanus toxoid is given. If the Schick test done at this visit becomes positive I then give the child diphtheria toxoid alone. As I mentioned previously, I am guided in my dosage by the child's reaction to the Schick control test of diluted toxoid. I do not give mixtures containing diphtheria toxoid to the child 6 years of age unless I know that the child is not sensitive to diphtheria toxoid.

Cardiac Lesions in Rheumatoid Arthritis.—We used to be taught, even until the last year or two, that rheumatoid arthritis was wholly different from and not in any way related to rheumatic fever. These postmortem studies show that this is not so; they reveal that, in a high percentage of cases of chronic arthritis, changes are found in the heart which are wholly indistinguishable from the changes in the heart in cases of rheumatic fever. It really is astounding when we think that postmortem examinations by reliable pathologists show that 30 to 60 per cent of patients dying with rheumatoid arthritis have cardiac lesions, valvular lesions of the heart that are identical in every way with the valvular lesions found in rheumatic fever. —Bohan, Peter T.: The Concomitant Diseases or Conditions Associated with Polyarthritis, *Postgraduate Medicine,* May 1947.

PULMONARY ARTERIOVENOUS ANEURYSM WITH SECONDARY POLYCYTHEMIA

Report of the First Case Treated by Lobectomy

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In 1938 the attention of the members of the medical profession was first called by Rodes [1] to congenital pulmonary arteriovenous aneurysm with secondary polycythemia as a cause of cyanosis. Since this first report only 7 of these cases have been reported,[2] although 2 others without polycythemia have been noted,[3] and rupture of the arteriovenous fistulas has been recorded as a cause of death in infants.[4] In none of the 7 cases just mentioned [2] was the condition diagnosed correctly by the first physician to see the adult patient. As 3 of these patients were completely cured by total pneumonectomy [5] and as the lesion has been recognized more frequently in the last eight years, it is important that physicians become aware of this condition as a cause of cyanosis.

Since our patient is the first to be treated by lobectomy and since this curable condition is so seldom diagnosed, we wish to report our case and review the diagnostic features of this lesion.

REPORT OF CASE

History and Preoperative Data.—M. M., a white unmarried woman aged 27, was first seen in the medical outpatient clinic of the University Hospital, Ann Arbor, Mich., on Oct. 26, 1945 with the chief complaint of "blueness." Mild cyanosis had been noted since birth but had increased in intensity in the last two years. She stated that it had occasionally decreased to almost complete disappearance for intervals as long as two weeks. From birth till the age of 9 years she had had moderate epistaxes once a week. After the age of 9 years these episodes decreased in frequency. She had also been bothered since her earliest memory by the prompt appearance of paresthesias in the extremities on the left side when she would lie on this side. Three or four years before admission she had noted the onset of episodes of syncope (lasting about three minutes), dizziness and paroxysmal nocturnal dyspnea occurring about once a month.

In September 1945 she consulted her physician, Dr. Cecil Corley of Jackson, Mich., because of pain in the legs extending from the feet to the hips and present since birth. Dr. Corley noted the cyanosis and obtained roentgenograms of the chest which showed no evidence of congenital heart disease but did show a tumor in the right lower lung field. He then referred her to the University Hospital, Ann Arbor, Mich., for diagnosis and treatment.

From the Departments of Internal Medicine and Surgery, University of Michigan.

[1] Rodes, C. B.: Cavernous Hemangiomas of the Lung with Secondary Polycythemia, J. A. M. A. **110:** 1914 (June 4) 1938.

[2] (*a*) Adams, W. E.; Thornton, T. F., Jr., and Eichelberger, L.: Cavernous Hemangioma of the Lung (Arteriovenous Fistula), Arch. Surg. **49:** 51 (July) 1944. (*b*) Hepburn, J. H., and Dauphinee, J. A.: Successful Removal of Hemangioma of the Lung Followed by the Disappearance of Polycythemia, Am. J. M. Sc. **204:** 681, 1942. (*c*) Goldman, A.: Cavernous Hemangioma of the Lung: Secondary Polycythemia, Dis. of Chest **9:** 479, 1943. (*d*) Jones, J. C., and Thompson, W. P.: Arteriovenous Fistula of Lung: Report of Patient Cured by Pneumonectomy, J. Thoracic Surg. **13:** 357, 1944. (*e*) Smith, H. L., and Horton, R. T.: Arteriovenous Fistula of the Lung Associated with Polycythemia Vera: Report of a Case in Which the Diagnosis Was Made Clinically, Am. Heart J. **18:** 589, 1939. (*f*) Makler, P. T., and Zion, D.: Multiple Pulmonary Hemangiomata, Am. J. M. Sc. **211:** 261, 1946. (*g*) Rodes.[1]

[3] (*a*) Sisson, J. H.; Murphy, G. E., and Newman, E. V.: Multiple Congenital Arteriovenous Aneurysms in the Pulmonary Circulation, Bull. Johns Hopkins Hosp. **46:** 93, 1945. (*b*) Janes, R. M.: Multiple Cavernous Hemangiomas of the Lungs Successfully Treated by Local Resection of the Tumors, Brit. J. Surg. **31:** 270, 1944.

[4] Bowers, W. F.: Rupture of Visceral Hemangioma as Cause of Death, Nebraska M. J. **21:** 55, 1936.

[5] Jones and Thompson.[2d] Smith and Horton.[2e] Sisson, Murphy and Newman.[3a]

The intake of drugs by the patient in the past had been limited to one or two tablets of acetanilid as often as once a month. Of significance in the family history was the fact that the patient's mother and living brother had had frequent epistaxes all their lives. The mother was described as having been exactly comparable to the patient in her degree of physical underdevelopment and cyanosis. She died at the age of 37 of "pneumonia at childbirth." When the brother was 12 years of age he was told by his physician that he had an incurable "rheumatic heart." He is apparently well now at the age of 30 and is not cyanotic

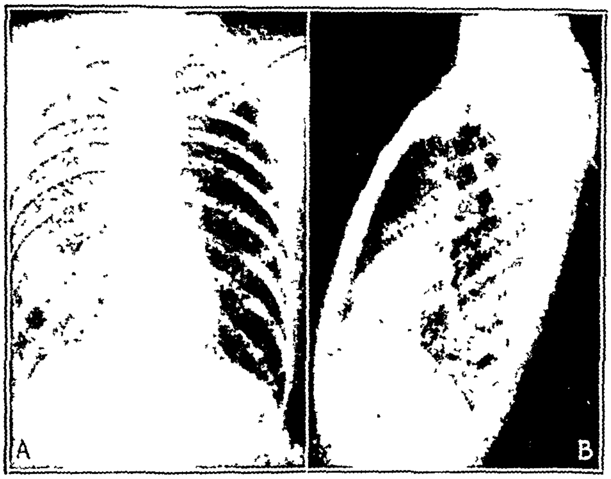

Fig. 1.—*A*, preoperative roentgenogram showing the arteriovenous aneurysm in the right lower lung field. *B*, right lateral view

On physical examination the patient was found to be 5 feet 2 inches (158 cm.) tall and to weigh 89 pounds (40.4 Kg.). She was poorly nourished and poorly developed, with masculine distribution of body hair and hypoplastic breasts. Her blood pressure was 110 systolic and 80 diastolic in the right arm, in the reclining position, while the blood pressure in the left arm could not be obtained. The radial pulses were strong and equal bilaterally. The patient exhibited generalized cyanosis, most pronounced over the face, lips and hands In addition close inspection revealed numerous pinhead-sized to pinpoint-sized blue spots, which appeared to be small, superficial hemangiomas, on the face, lips and palms. The lung fields and heart were entirely normal to physical examination. The spleen was not enlarged. The extremities showed only minimal clubbing of the fingers. The superficial veins were unusually prominent. The rest of the physical examination was entirely noncontributory.

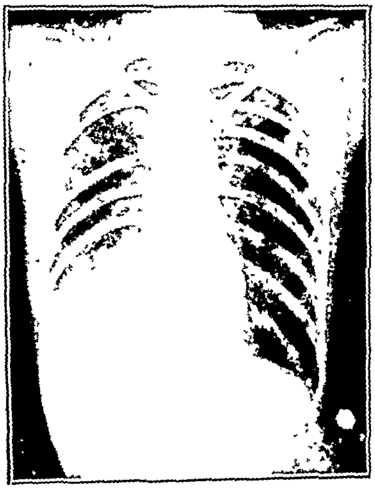

Fig. 2.—Postoperative roentgenogram of the chest, with aneurysmal communication removed with lower lobe of the right lung.

Laboratory examinations included a complete blood count with a hemoglobin level of 21.6 Gm. (138 per cent). The red blood cell count was 8.2 million per cubic millimeter with a hematocrit reading of 75 volumes per cent. The mean corpuscular volume was 91 cubic microns. The white blood count was 7,000 per cubic millimeter with a normal differential. The sedimentation rate was 1 mm. per hour by the Wintrobe method. Urinalysis and the Kahn test on the blood were negative. These findings together with the roentgenograms sent by Dr. Corley suggested the diagnosis of pulmonary arteriovenous aneurysm with secondary polycythemia.

The patient was advised to have a lobectomy as treatment for her disease. She returned on March 18, 1946, at which time the history, physical examination and laboratory studies were not significantly changed. Roentgenologic studies showed a 3 cm. area of increased density in the medial portion of the right lower lung field, half way between the anterior and posterior surfaces of the lung. Pulsations were definite but very small. A tail-like projection seemed to extend from this area of increased density to the hilar vessels on that side (fig. 1). An electrocardiogram, read by Dr. F. N. Wilson, was well within normal limits. Oxygen saturation studies done by Dr. Vivian Iob showed the arterial blood saturation, based on hemoglobin content, to be 77 per cent and the venous oxygen saturation to be 61 per cent. The arm to tongue (dehydrocholic acid) circulation time was 12 seconds, the normal being 10 to 16 seconds. The vital capacity was 3,000 cc.

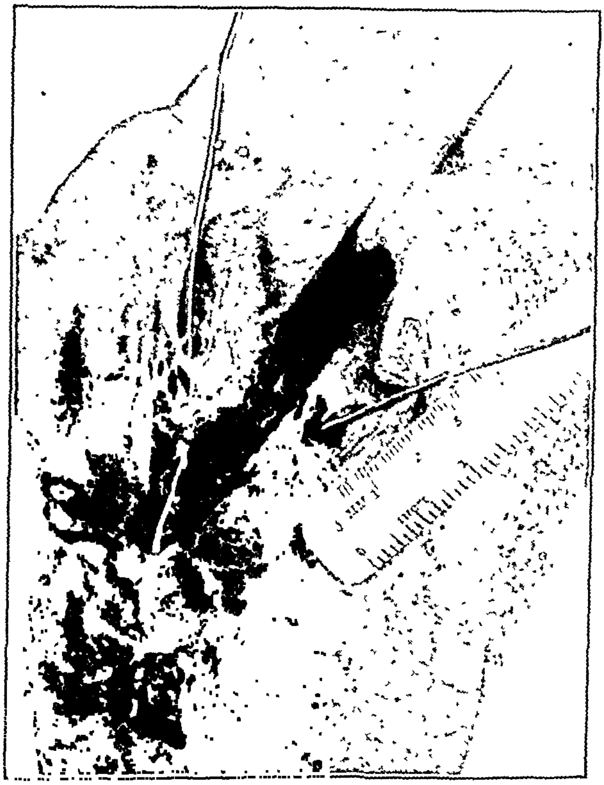

Fig. 3—The aneurysm, sectioned, with arterial side on the right and venous side to the left. The photograph was supplied by Dr C. V. Weller, chairman of the Department of Pathology.

Operative Observations.—On March 21, 1946 a lobectomy of the lower lobe of the right lung, was performed by one of us (F. X. B.) under intratracheal ether vapor and oxygen anesthesia. With the patient in the left lateral decubitus position the incision was made along the course of the fifth rib. The rib was resected subperiosteally. Although lobectomy was contemplated (we were under the impression that the aneurysm lay in the posterior aspect of the middle lobe) the fifth rib was resected rather than the seventh because we were aware of the experience of Jones and Thompson[2d] who had planned a lobectomy of the upper lobe for their patient but were forced to perform a pneumonectomy because of a vascular abnormality (absence of the inferior pulmonary vein). On opening the pleura no abnormalities were observed, and on separating the fissure between the middle and lower lobes the aneurysm was immediately apparent on the anterior surface of the lower lobe of the lung, with its upper margin approximately 6 cm. from the hilum of the lobe. The aneurysm itself measured about 4 cm. in diameter, was dark red and so thin-walled that the blood could be seen passing through it. There was no visible pulsation, and no thrill was palpable.

The entire fissure surface of the lower lobe, superior to the aneurysm, was covered with a fine meshwork of telangiectatic vessels, which made dissection of the hilum somewhat more hemorrhagic than is usual. After it had been ascertained that both an inferior and superior pulmonary vein were present, the lower lobe of the right lung was resected by the individual dissection and ligation technic. The fissure between the upper lobe and the apex of the lower lobe was incomplete, division being accomplished between hemostats with oversewing of the cut surface of the upper lobe. Postoperatively the chest was drained by means of an intercostal catheter for forty-eight hours.

The arterial and venous paths to the aneurysm could be demonstrated in the resected lobe (fig. 3)

Postoperative Course.—The postoperative course was uneventful, one thoracentesis being necessary after removal of the drainage tube.

Immediately after the operation there was a noticeable decrease in cyanosis even though polycythemia was still present. During the subsequent hospital days progressive diminution of the cyanosis occurred. The hemoglobin content was 17.5 Gm. on the fourth postoperative day. On the eleventh postoperative day studies of the venous and arterial blood were carried out. Data on the arterial blood were as follows: hematocrit reading 57.7 volumes per cent, hemoglobin 17.9 Gm., oxygen content 21.8 volumes per cent, oxygen saturation 23.7 volumes per cent and the per cent of oxygen saturation had risen to 92.2 per cent (as compared with the preoperative value of 77 per cent). The percentage of venous oxygen saturation was 60. The patient was discharged on April 3, 1946, the thirteenth postoperative day.

On May 1, 1946 she returned for a follow-up examination. She stated that she no longer had leg pain and felt well except for some residual thoracic discomfort. Examination revealed the physical signs incident to lobectomy, mild cyanosis and generalized desquamation of the skin. The blood pressure was now obtainable in the left arm and was 110 systolic and 78 diastolic. Her hemoglobin level on this visit was 18.4 Gm. (118 per cent), as compared with the preoperative level of 21.6 Gm. (138 per cent). Similarly the hematocrit reading was 62.5 volumes per cent and the red blood cells count was 6.7 million, as compared with the preoperative levels of 75 volumes per cent and 8.2 million.

In June roentgenograms of the chest showed a satisfactory operative result and did not disclose other aneurysms (fig. 2).

COMMENT

The clinical picture in this case closely resembles that of the 7 previously reported cases of pulmonary arteriovenous aneurysm with secondary polycythemia. Seven of the 8 patients, including ours, have been aged 20 to 27 years, the other 1 being 40 years old.[2e] Five have been men and three women. The chief complaint on admission has varied so widely as to be of little aid in making the final diagnosis. The symptoms, however, have been remarkably constant and consist of (1) cyanosis, (2) clubbing of the digits and (3) symptoms of anoxia.

1. *Cyanosis.*—Half of the patients had exhibited some degree of cyanosis since birth. The others showed cyanosis for two to sixteen years.[6] It is notable that cyanosis secondary to a pulmonary arteriovenous aneurysm can occur in the absence of polycythemia.[3]

2. *Clubbing of the Digits.*—Clubbing of at least the fingers was present in all cases. The degree of clubbing roughly paralleled the size and number of the pulmonary fistulas. Our patient had but minimal clubbing secondary to one 3 by 2 cm. fistula.

3. *Symptoms of Anoxia.*—The most commonly observed symptom of anoxia was dyspnea, which was present in 6 of the 8 cases.[7] Only cyanosis was noted by Jones and Thompson.[2d] Other common symptoms of anoxia manifested by the majority of patients were mild or decided syncope with or without convulsions, paroxysmal nocturnal dyspnea, substernal oppression and paresthesias. These symptoms of anoxia are probably secondary to the extremely low oxygen saturation of arterial blood observed in patients with this condition.

A peculiar and unexplained aspect of symptomatology in 3 of the cases is unilateral complaints related to the left side of the body. One patient [2a] could not lie on the left side because it caused him to cough. This symptom was relieved by removal of the fistula in the left lung by left pneumonectomy. Our patient could never lie on her left side because the extremities on the left would immediately develop intense paresthesias. This complaint disappeared when the fistula on the right was removed by lobectomy of the lower lobe of the right lung. In another patient [3a] there developed numbness in the left arm and shoulder and weakness of the left hand shortly before admission to the hospital. Unfortunately we do not know the effect of treatment in this case, since the patient died during angiography.

The family history of heredity of this lesion is interesting. In 4 instances this point was omitted [8] and in 2 the presence of cyanosis in other members of the family was denied.[9] In the case of Adams and his associates [2a] the father of the patient had had blue spots on his lips and nose bleeds similar to those of the patient. This was also true of other men in the family. The father had had a roentgenogram of the chest which had shown "shadows." The description of our patient's mother suggests a hereditary tendency. The brother's history is suggestive and is being investigated at the present time.

The only constant observations on physical examination in the reported cases were cyanosis and clubbing of the fingers. Strangely enough, only 3 patients had a murmur produced by the vascular communication.[10] In the majority of the reports no pulsation of the communication was noted by roentgenologic examination. No cardiac abnormality or abnormality of the pulse pressure or of the pulse rate was present. Five of the 8 patients were underdeveloped, presumably due to the prolonged anoxia caused by the congenital lesion.[11] Five of the 8 patients had cutaneous hemangiomas.[12] These were located on the face, on the lips, behind the ear and on the palms. Since they easily pass unnoticed, it is entirely possible that all patients with this type of lesion have had them. The surface of the lung at surgical intervention or autopsy is also frequently covered with these small hemangiomas. Since the spleen is never enlarged, with the possible exception of the case of Goldman [2c] in which it was "just palpable," and since the white blood count is never elevated, the possibility of polycythemia vera may be eliminated. In spite of this fact the disease of 2 patients [13] with pulmonary aneurysms was so diagnosed and treated.

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[6] Adams, Thornton and Eichelberger.[2a] Hepburn and Dauphinee.[2b] Goldman.[2c] Makler and Zion.[2f]

[7] Rodes.[1] Hepburn and Dauphinee.[2b] Goldman.[2c] Smith and Horton.[2e] Makler and Zion.[2f]

[8] Hepburn and Dauphinee.[2b] Jones and Thompson.[2d] Smith and Horton.[2e] Makler and Zion.[2f]

[9] Rodes.[1] Goldman.[2c]

[10] Jones and Thompson.[2d] Smith and Horton.[2e] Makler and Zion.[2f]

[11] Rodes.[1] Hepburn and Dauphinee.[2b] Goldman.[2c] Smith and Horton.[2e]

[12] Rodes.[1] Adams, Thornton and Eichelberger.[2a] Goldman.[2c] Makler and Zion.[2f]

Most striking of laboratory observations is the secondary polycythemia with red blood cell counts ranging from 6.5 million [2e] to 11.45 million.[2c] The hemoglobin level in these cases ranged from 118 per cent to 138 per cent. The highest hematocrit reading recorded [2b] was 80 volumes per cent. The oxygen saturation of the arterial blood ranges from 70 to 80 per cent. The vital capacity and the blood circulation times are always within the normal range, although the latter approaches the lower limit of normal.

In none of the 8 cases was the diagnosis made by the first physician to see the patient. In 3 cases more fistulas were found at pathologic examination than by roentgenologic examination.[14] Yet surgical extirpation of the main fistulous communication [2a] has abolished the symptom complex. Apparently the most frequent mode of death is by pulmonary hemorrhage [15] as in pulmonary arterial aneurysms. The fact that patients treated have been reported to be cured at five and a half months,[2a] one year [2b] and seven months [2d] after pneumonectomy suggests that surgical treatment is worth while. Pneumothorax on the side of the lesion is worthless either as a diagnostic or therapeutic procedure, since no change in the clinical picture occurs even though the lung is thoroughly collapsed.[2b]

SUMMARY

Cyanosis secondary to congenital pulmonary arteriovenous aneurysm with secondary polycythemia is one type of congenital cyanosis that can be completely cured by surgical intervention. Although this lesion is supposedly extremely rare, the fact that all 8 cases have been diagnosed since 1938 suggests that many of these lesions have been missed in the past.

The most important prerequisite for making the diagnosis is an awareness of this lesion as a cause of cyanosis and polycythemia. The clinical picture consists of a patient of either sex, usually from 20 to 30 years of age, with cyanosis recently increased in intensity. Symptoms of anoxia predominate with hemorrhage from superficial hemangiomas, usually from the nose. Cyanosis has often been present in siblings or parents. Physical examination reveals clubbing of the digits and cyanosis. Maldevelopment and superficial hemangiomas are also present, but there is usually no abnormality of the heart, pulse pressure or pulse rate and no pulmonary vascular murmur.

The vital capacity and blood circulation times are normal, but secondary polycythemia is present. The diagnosis is clinched by the roentgenologic observation of tumor-like shadows in the lung. These shadows usually do not pulsate but do usually show communications with the hilar vessels. The patient is completely cured by pneumonectomy, lobectomy or local excision of the fistula.

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[13] Jones and Thompson.[2d] Smith and Horton.[2e]

[14] Rodes.[1] Adams, Thornton and Eichelberger.[2a] Sisson, Murphy and Newman.[3a]

[15] Rodes.[1] Bowers.[4]

THE MECHANISM AND MANAGEMENT OF INJURIES OF THE HEAD

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Great strides have been made in the study of the mechanism and management of injuries of the head during the past ten years. In the present paper it is proposed that the more important of these studies be analyzed.

MECHANISM OF CRANIOCEREBRAL TRAUMA

Injury to the head may occur by direct or indirect violence. In a direct blow the head is relatively fixed and the striking object is in motion. A direct blow may cause compression of the intracranial contents by deformation of the skull, and it may set the head to motion (acceleration). In indirect blows the head in motion comes in contact with a nonmoving or slower moving object. Under these circumstances, compression and deceleration may obtain. Compression, deceleration and acceleration frequently coexist in the usual injuries such as auto accidents, falls, etc.[1] With direct blows the lesion is more likely to be limited to the head, whereas with indirect violence the injuries are usually multiple.

Deformation of the skull and acceleration of the head result in increased intracranial pressure waves, with steep gradients. The presence of the craniospinal junction at the foramen magnum may be an all-important factor in the involvement of centers in the brain stem. Such an opening may cause pressure gradients between the cranial cavity and the spinal canal, with encroachment on medullary structures.

The effects of craniocerebral trauma in the experimental animal are manifested by alterations of function of centers in the brain stem, namely the vasomotor, the respiratory and the sensory-motor centers supplying the face. The generalized body rigidity frequently seen results from stimulation of the pyramidal tracts in the brain stem.[2] Besides these disturbances in the brain stem, hemispheric abnormalities have been demonstrated by the electroencephalograph, which has shown increase in amplitude and frequency of pattern immediately following impact in some experiments.[3] In others, there has been an initial depression of the electroencephalographic pattern.[4] It is proved beyond doubt that death from acute injury of the head in the experimental animal results from direct damage to medullary centers. Autopsies in human beings found dead at the scene of accident reveal pathologic changes in the form of petechial hemorrhages in the brain stem similar to those observed in the experimental laboratory.

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Read before the Section on Surgery, General and Abdominal, at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946.

[1] Gurdjian, E. S., and Webster, J. E.: A. Research Nerv. & Ment. Dis., Proc. (1943) **24**: 48, 1945.

[2] Polis, A.: Rev. chir., Paris **14**: 274 and 645, 1894. Denny-Brown, D., and Russell, W. R.: Brain **64**: 93, 1941. Gurdjian, E. S., and Webster, J. E.: Surgery **16**: 381, 1944.

[3] Walker, A. E.; Kollros, J. J., and Case, T. J.: J. Neurosurg. **1**: 103, 1944.

[4] Dow, R. S.; Ulett, G., and Tunturi, A.: J. Neurophysiol. **8**: 161, 1945. Williams, D., and Denny-Brown, D.: Brain **64**: 223, 1941.

It is reasonable to assume that in the human being death soon after injury is due to medullary paralysis, as it has been found to be in the experimental animal.

The effects of trauma of the head can be correlated with the amount of absorbed energy whether the head is fixed or free to move. In the experimental animal (dog), 200 inch-pounds of energy absorbed by the head in 1/1,000 to 3/1,000 of a second or less, causes profound pathophysiologic effects, usually terminating fatally. When the head is free to move, the possibility of mass movements of the brain is greater.

The definition of the term "concussion," or immediate post-traumatic unconsciousness "unassociated with microscopic or macroscopic lesions of the brain," should be changed in the light of recent experimental work.[5] New pathologic technics have revealed the presence of intracellular changes even in the most minimal degrees of concussion. The damage to the cells may or may not be reversible.

We have had the opportunity to study deformations of the skull and changes in intracranial pressure at the time of impact by certain new electronic and engineering technics. For the study of deformations of the skull, we have used (1) the strain gage–cathode ray oscilloscope method and (2) the "stresscoat" technic. The former is a sensitive, quantitative method of determination of deformation; the latter permits the study of the direction and the path of strains following a blow.

Strain Gage–Cathode Ray Oscilloscope Method.—The strain gage is a length of wire 1/1,000 inch (0.0254 mm.) in diameter which is cemented to the surface of the skull with methyl methacrylate cement.[6] Deformations of the skull following a blow also deform the strain gage. Inbending of the skull causes a shortening of the wire, whereas outbending results in a lengthening of the wire in the strain gage. Shortening of the wire results in decrease in the resistance, and lengthening, an increase in the resistance through the gage. Such changes in resistance, due to deformations of the skull, are shown on the oscillograph, and permanent records are obtained by photography.

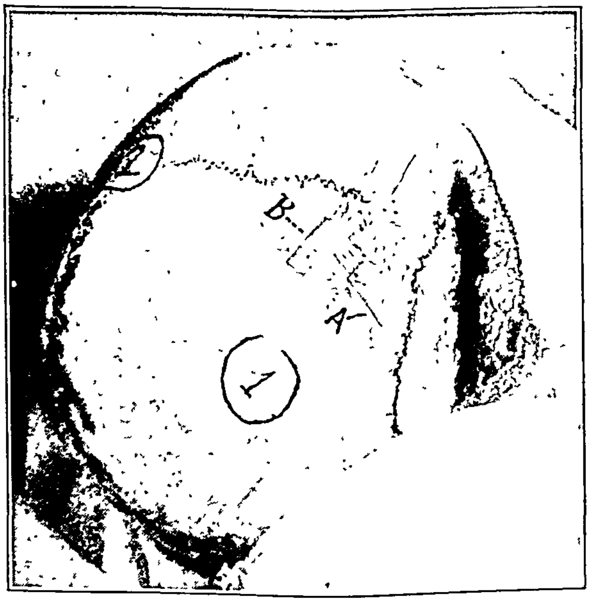

Fig. 1.—A human skull prepared for strain gage studies of deformation from hammer blows; 1 and 2 are the areas of impact, and A and B are the strain gages cemented to the surface of the skull. The records obtained from such preparations are seen in figure 2. Previous experimental work has shown that the strain gage measurements of the dead skull with contents intact are similar to those obtained on the skull of the animal under anesthesia. It is felt, therefore, that these studies on the human skull may represent premortem conditions.

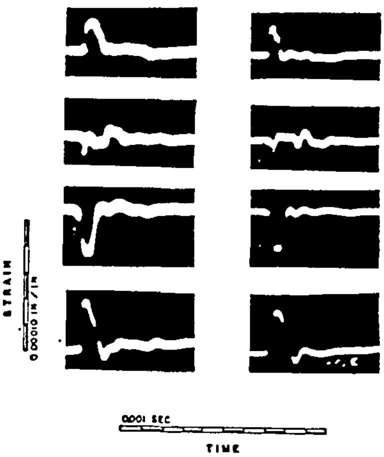

Fig. 2.—To the left are records of one human autopsy specimen and to the right are records of another specimen. The blows were administered as indicated in figure 1. Upper row, hammer blow at point 1 with recording at strain gage A; second row, blow at point 2 and recording at strain gage A; third row, blow at point 1 and recording at strain gage B; fourth row, blow at point 2 with recording at strain gage B. Upswing denotes tension, and downswing denotes compression. Total time of disturbance was 1/250 of a second. Initial deformation time was 1/2,000 to 1/5,000 of a second. There were three to six oscillations during the disturbance at the rate of 900 to 1,200 cycles per second.

The measurements with the strain gage of deformations in the skull of the dog under pentobarbital sodium anesthesia were similar to those obtained twenty-four hours after the death of the animal with intracranial contents intact. The dry skull is not suitable for this study, owing in part to the absence of the dampening effect of the intracranial contents. Since strain gage measurements of deformations of the skull were known to be the same in the living under pentobarbital sodium anesthesia and in the dead dog with intracranial contents intact, human autopsy material, soon after death, was studied with this technic. It was concluded that the findings in the autopsy specimens represent conditions present in the living (fig. 1).

On the delivery of a blow to the human skull, the time of the initial deformation varied from 1/5,000 of a second to 1/2,000 of a second. The total elapsed time for the deformation pattern was between 1/200 to 1/250 of a second. In different parts of the skull there were 3 to 6 cycles during the deformation process. These occurred at the frequency of about 900 to 1,200 cycles per second (fig. 2).

The pattern of deformation shown by this method is the same irrespective of the energy of the blow. Whether the impact is the result of injury by hammer, brick or fall, the deformation pattern is also the same provided that there is no perforation of the skull from high velocity blows.

"Stresscoat" Studies of Deformations of the Skull.—By the "stresscoat" technic, which employs a strain-sensitive lacquer, the direction and the path of strains were studied. With a lacquer of a given sensitivity applied to the surface of the skull, deformations of the order of 0.0005 to 0.0015 inch per inch resulted in cracks in the lacquer coating. These cracks demonstrate the paths of the strains following the blow.[7] Experimental observations have shown that the deformation patterns in the living animal under anesthesia, in the dead animal with intracranial contents intact and in the dry skull of the same animal are similar.

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[5] Windle, W. F.; Groat, R. A., and Fox, C. A.: Surg., Gynec. & Obst. **79**: 561, 1944.

[6] Gurdjian, E. S., and Lissner, H. R.: J. Neurosurg. **1**: 393, 1944.

[7] Gurdjian, E. S., and Lissner, H. R.: Surg., Gynec. & Obst. **81**: 679, 1945.

The magnitude of strain may be different, but the paths and directions are the same.

By a study of freshly obtained skulls, it was found that blows in various regions of the skull caused discrete areas of deformation in the region of impact as well as in remote parts. In the occipital region, cracks appeared in the lacquer with half the amount of absorbed energy as compared with the frontal region. This technic measures only tensile (tearing apart) strains; compression (pushing together) strains are not seen. Up to the present time we have studied the behavior of the external surface of the skull and have no information concerning what may happen on the interior. Tensile deformations on the internal surface of the skull are undoubtedly important and may result in fracture lines. From a study of our present material it appears likely that a certain number of fractures, due to general deformation of the skull, may occur from tension, or an outbending, following the initial inbending, after impact (figs. 3 and 4).

On the basis of our work with the "stresscoat" technic thus far, the following conclusions may be drawn:

1. Threshold deformations in different regions of the skull are obtained with varying energies. For instance, it takes twice as much energy to cause cracks in the frontal as it does in the occipital region.
2. Some fractures may occur from outbending following the initial inbending of the skull.
3. Many fractures occur parallel to lines of stress shown in these studies.
4. From the position and the direction of the skull fracture, one may be able to guess the area of impact which caused the fracture.
5. "Contrecoup" cracks in the lacquer were obtained with occipital blows in 1 specimen. The cracks following an occipital blow in this specimen appeared at the frontozygomaticosphenoid junction on one or both sides

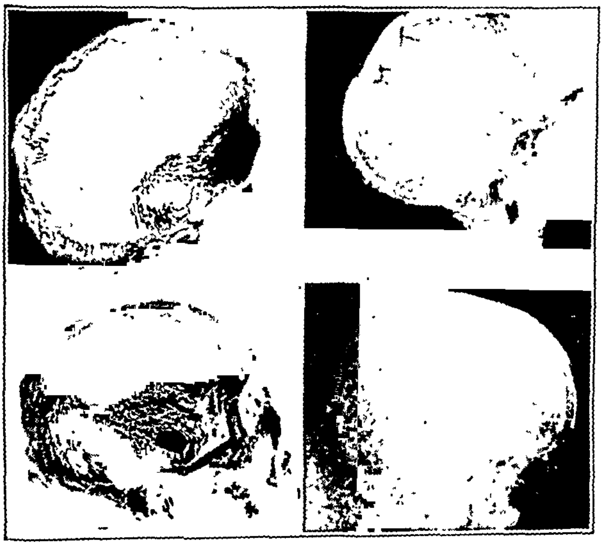

Fig. 3.—To the left, "stresscoat" preparation *in a dry skull following* a posterior parietal blow. Note that the direction of the cracks in the lacquer are downward and forward toward the temple. To the right are two roentgenograms with fracture lines extending downward and forward toward the temple from the posterior parietal region. The upper roentgenogram also shows a depression *of the posterior* parietal region at the midline. It is reasonable to assume that the point of impact was in this region, with resultant depression *and also fracture* lines extending downward and forward toward the temple on both sides, paralleling the stresscoat lines of crack. In the lower roentgenogram the fracture is more widely separated in the parieto-occipital region near the midline. This is the region of the greatest stress from the blow, with the fracture extending downward and forward, eventually becoming a *thin line, to disappear* in the temple.

Intracranial Changes in Pressure at the Time of Impact.—Increase in intracranial pressure occurs as a result of the deformation of the skull and acceleration or deceleration of the head. In the ordinary case of head injury the increase in intracranial pressure is wavelike or directional and may not necessarily involve the entire cranial cavity because of the rapidity of the changes. Steep pressure gradients, lasting in the neighborhood of $^{1}/_{1,500}$ of a second or less, may result in shear and tear of tissues in the path of the pressure wave. In a bullet wound of the cranial cavity the expended energy is so intense that the entire cranial cavity may undergo an explosive effect, due to a tremendous increase in intracranial pressure.

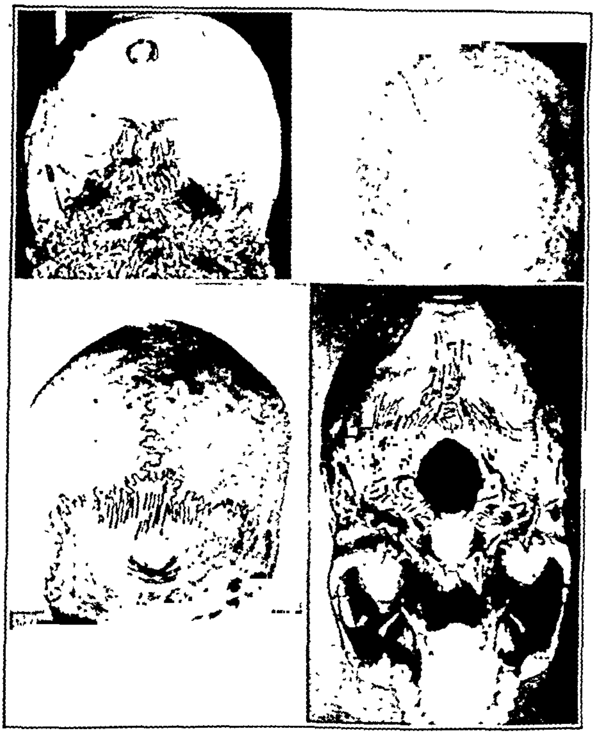

Fig. 4.—"Stresscoat" preparation in a cadaver skull and two views of a dry skull following a midoccipital blow. Note the direction of the cracks in the lacquer toward the foramen magnum. In the upper right quadrant is a roentgenogram showing an occipital fracture extending down to one side of the foramen magnum paralleling the lacquer cracks in the stresscoat preparations.

A study was made of intracranial pressure by the use of a pressure plug–cathode ray oscilloscope method. The electrical conductivity in an electrolyte varies with the pressure exerted on the solution.[8] By using this principle, it has been shown that a blow on the skull causes an increase in intracranial pressure at the site of the blow, with the pressure in the negative phase at a point diametrically opposite the area of impact. Working with the experimental animal (dog) it was found that the maximal increase in pressure was obtained in $^{1}/_{1,500}$ of a second following impact.[6] The period of change in intracranial pressure was in the neighborhood of $\frac{1}{200}$ to $\frac{1}{250}$ of a second. Three to five oscillations occurred during the period of disturbance.

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[8] Fanjung, I.: Ztschr. f. physiol. Chem. **14**: 673, 1894; cited by Creighton, H. J., and Koehler, W. A.: *Principles and Applications of* Electro-Chemistry, ed. 3, New York, John Wiley & Sons, Inc., 1935, vol. 1, p. 305. Korber, F.: Ztschr. f. physiol. Chem. **67**: 212, 1909; cited by Creighton, H. J., and Koehler, W. A.: Principles and Applications of Electro-Chemistry, ed. 3, New York, John Wiley & Sons, Inc., 1935, vol. 1, p. 305.

As a result of the deformation of the skull, the increase in intracranial pressure and the mass movements of the brain, certain primary pathologic conditions ensue. These include cell damage, fracture, contusions and lacerations of brain tissue and intracranial hemorrhage.

CHEMICAL STUDIES IN EXPERIMENTAL HEAD INJURY

The arteriovenous differences in oxygen, carbon dioxide and glucose (samples of blood from the femoral artery and the sagittal sinus) remain within normal limits in moderately and severely injured experimental animals. In the normal brain, chemical studies on specimens frozen with liquid oxygen revealed the presence of 10 to 20 mg. of lactic acid per hundred grams of cerebral tissue.[9] The study of lactic acid in the brain of animals subjected to inhalation of low oxygen revealed an increase in the lactic acid proportional to the degree of the anoxia. It has also been shown that the lactic acid in the postmortem brain tissue is markedly increased. The study of the amount of lactic acid in the brain is thus a measure of the normalcy of the oxidative processes in that tissue. The brain of the experimental animal subjected to cranial injury revealed normal values except in the areas of contusions and lacerations. At such sites the lactic acid was markedly increased, denoting evidence of the defective local oxidation of glucose.[10]

Specimens of brain tissue by this technic were obtained as early as fifteen seconds after impact, and it was found that the "concussive" phenomenon is accompanied by normal levels of lactic acid. The concept that anemia of the brain at the time of impact is the cause of the post-traumatic unconsciousness is well disproved.[11]

In the experimental animal the use of a high concentration of oxygen, and oxygen with 5 per cent carbon dioxide, for as long as forty-eight hours does not materially change the disturbed oxidative mechanisms in traumatic contusions. However, it was found that when the animal was maintained at anoxic levels of oxygen, the addition of carbon dioxide increased the percentage of oxygen saturation (unpublished data).

COMPOUND FRACTURES, GUNSHOT AND OTHER PENETRATING WOUNDS

The management of penetrating wounds and the mechanism of wounding by high velocity missiles have received considerable attention during World War II.[12] The "temporary" cavity about the passing bullet, so beautifully shown by Butler, Puckett, Harvey and McMillan[13] and Black, Burns and Zuckerman,[14] is the cause of the extensive pulping of brain tissue at considerable distances from the region of the track. With this picture clearly in mind, it is no wonder that the successful management of such cases depends on the thorough debridement of the pulped brain, removal of foreign particles and fragments of bone. The long tedious technic of osteoplastic flap has been replaced by a complete removal of the area of shattered bone with a rongeur. If at all possible, the dura is closed if necessary with the use of fascia lata, pericranium, or temporal fascia. In extensive loss of tissue, all effort is made to cover the exposed brain with transposed scalp. Exposures are made through long curved incisions in order to enable the complete excision of the wound of entrance. The management of the cases in which there is infection, particularly those with abscesses of the brain, has been simplified by the use of chemotherapy and penicillin and by a policy of a complete excision of the infected brain, foreign bodies and fragments of bone[12] (fig. 5).

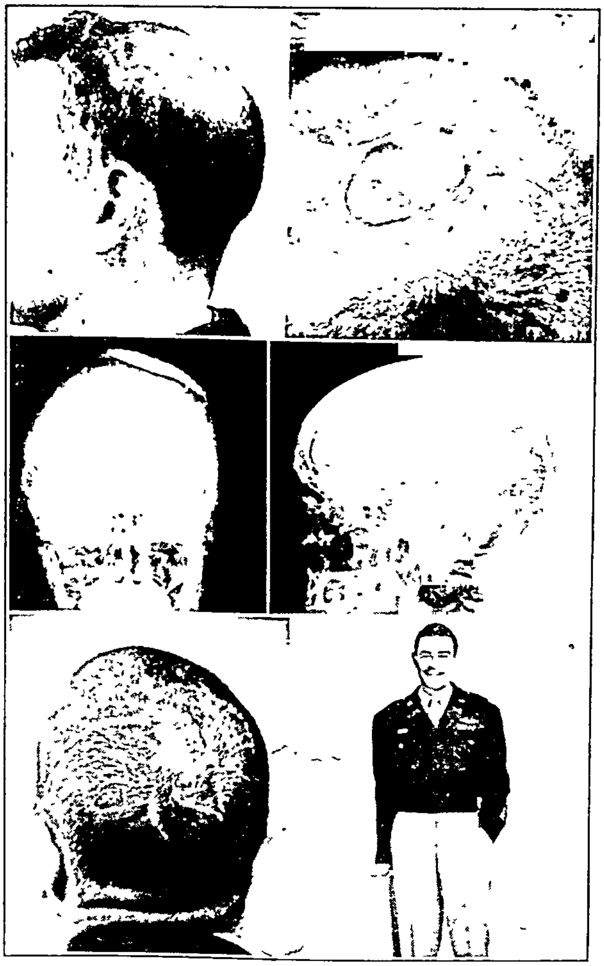

Fig. 5.—In the upper row are shown the posteroanterior and lateral views of an abscess of the brain due to penetrating wound by shell fragment treated by exteriorization, excision of abscess, shell fragments and necrotic brain tissue, followed by closure with fascia lata. Ten days later the fascia lata transplant was removed and a split thickness graft of skin was used. The middle row, following tantalum repair of skull defect. Lower row, the patient as he appears today.

In cases of civilian gunshot wounds of the brain, if the patient shows evidence of resuscitation by transfusions and other therapy, a complete and thorough debridement of his wound should be undertaken as soon as possible. But if, because of his poor condition, he is not operated on for two or more days, a delayed primary debridement may be safely accomplished. In a case of a gunshot wound of the right frontotemporal region, the debridement was done four days after

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9. Stone, W. E.: J. Biol. Chem. **149**: 29, 1943.

10. Gurdjian, E. S.; Webster, J. E., and Stone, W. E.: Surg., Gynec & Obst. **78**: 618, 1944.

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13. Butler, E. G.; Puckett, W. O.; Harvey, E. N., and McMillan, J. H.: J. Neurosurg. **2**: 358, 1945.

14. Black, A. N.; Burns, B. D., and Zuckerman, S.: Brit. M. J. **2**: 872, 1941.

admission to the hospital. Almost all of the frontal lobe on the right side was removed, the dura was repaired with temporal fascia and the wound was closed in layers without draining. No complications arose and the wound healed by primary intention.

In the management of compound and simple depressed fractures in civilian life, some preoperative forethought in planning may minimize postoperative defects (fig. 6). In the absence of a torn dura, some of the fragments of bone may be used to advantage to obviate a later repair of the skull defect. The use of an inanimate transplant at the time of repair of a depressed fracture, as advocated by Gardner[15] may be undertaken with confidence except in cranio-orbital and frontal sinus wounds, where later repair of the defect is preferable, since the purpose of the primary operation is to obviate intracranial infection by preventing the formation of cranionasal fistulas.

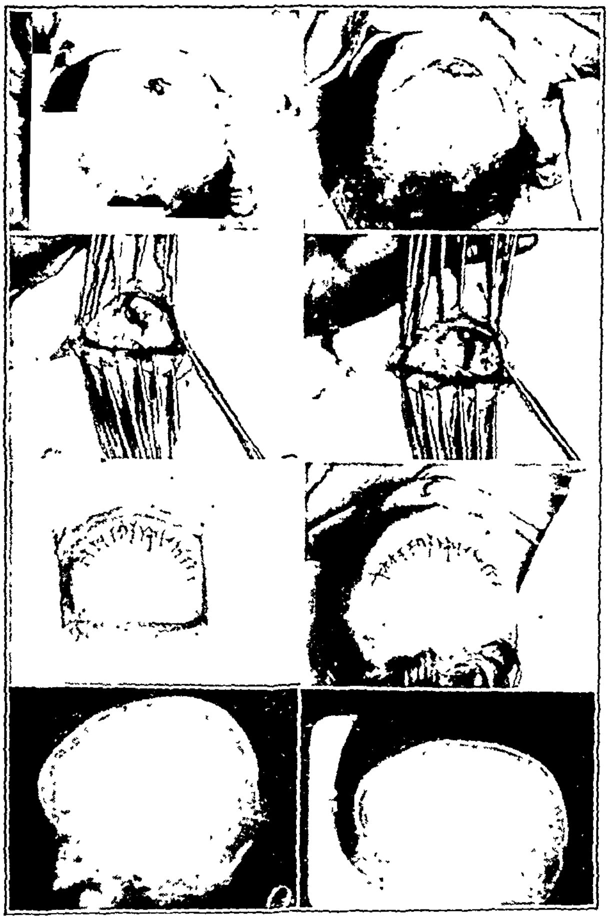

Fig. 6.—Compound depressed skull fracture of the midfrontal region at the hairline. The laceration was excised through a curved excision. The dura was found intact. The depression was elevated with little loss of bone tissue. Some preoperative forethought will obviate postoperative defects which might necessitate later repair.

In compound fractures, the initial wound may be excised in toto in the greatest majority of the cases by the use of long curved incisions (fig. 6). This is preferable to the usual method of excising only the edges of the wound.

The repair of skull defects has received considerable attention during World War II. Osteoperiosteal transplant from the outer table of the skull may be used for small defects and for the younger patient. Tantalum[16] and methyl methacrylate[17] have been proved to be sufficiently inert to make their use safe in the larger defects of the skull. The preparation of the transplant before operation for a satisfactory postoperative result is important, and has been suggested by several authors.[18]

CONCLUSIONS

1. Head injury may be by direct or indirect violence. Compression, acceleration or deceleration ensue. In most injuries a combination of compression, acceleration and deceleration takes place.

2. The amount of absorbed energy by the head in an optimum period of time governs the severity of the physiologic effects, whether the head is fixed or free to move.

3. A blow may result in deformation of the skull, increase in intracranial pressure and mass movements of the brain. The latter is more frequent when the head is free to move.

4. Fracture from general deformation of the skull may result from an outbending following the initial inbending after impact. Depending on the shape and velocity of the injuring object, there may be a localized or a generalized deformation.

5. Most fractures, including depressed fractures, result from tension (tearing apart) rather than from compression.

6. The oxidative processes of the brain proceed in normal fashion after moderate and severe head injuries, except in areas of contusion and laceration of the brain. At such sites there is a defective oxidation of glucose. In the experimental animal the arteriovenous differences of oxygen, carbon dioxide and glucose are within the range of normal in the moderately and profoundly injured.

7. In civilian life many simple and compound depressions may be repaired in such a manner as to prevent defects of the skull.

8. When it is necessary to repair a skull defect, an osteoperiosteal transplant from the outer table of the skull may be used for small defects and in the young. Tantalum and methyl methacrylate may be used for the larger defects. In some cases the repair of the defect may be undertaken at the time of the primary operation.

9. In gunshot wounds of the brain, operative treatment is indicated as soon as the patient's condition permits. With the use of chemotherapeutic agents, penicillin and early debridement, intracranial infection develops in few cases.

ABSTRACT OF DISCUSSION

Major Earl Walker, Cushing General Hospital: One has noted both in civilian and military experience that patients who suffer minor wounds to the head will frequently lose consciousness, whereas other patients suffering severe compound wounds of the skull will have no period of unconsciousness whatsoever. The studies here presented enable us to understand this phenomenon. When a blow is struck to the head, two phenomena occur within the head: first, the deformation of the skull, with the subsequent waves traveling along the skull, and secondly, intracranial pressure waves traveling through the brain substance. Physicists state that compression alone does not cause alteration in nerve function. It is interaction of the forces produced by the intracranial pressure and the deformation of the skull which gives rise to the concussive phenomenon. The observations of Dr. Gurdjian do more than satisfy our scientific curiosity. He has shown us that in cranial concussion, there is no anoxia and there is little anoxia of any other portion of the brain unless contusion occurs. We know from other experiments that if anoxia develops in the blood cerebral edema will occur. So in the central nervous system, if there is any obstruction to the air passages, a pronounced cerebral edema develops, not due to the actual damage to the brain itself, but due to the generalized anoxia. It is therefore important, and a fact which is frequently overlooked, that the air passages be kept perfectly free of mucus and foreign bodies such as teeth, so that no such anoxia will develop.

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[15] Gardner, W. J.: U. S. Nav. M. Bull. **43**: 1100, 1944.

[16] Pudenz, R. H.: Repair of Cranial Defects with Tantalum, J. A. M. A. **121**: 478 (Feb. 13) 1943. Robertson, R. C. L.: J. Neurosurg. **1**: 227, 1944. Mayfield, F. H., and Levitch, L. A.: Am. J. Surg. **67**: 319, 1945. Hemberger, A. J.; Whitcomb, B. B., and Woodhall, B.: J. Neurosurg. **2**: 21, 1945.

[17] Gurdjian, E. S.; Webster, J. E., and Brown, J. C.: Surgery **14**: 876, 1943. Elkins, C. W., and Cameron, J. E.: J. Neurosurg. **3**: 199, 1946.

[18] Baker, G. S.: Proc. Staff Meet., Mayo Clin. **21**: 177, 1946. Footnote 17.

Dr. E. S. Gurdjian, Detroit: Dr. Walker gave an excellent discussion on the mechanism of concussion. I think one other point that should be emphasized is that we are dealing with dynamic pressures, not static pressures. A hydrostatic pressure in an enclosed cavity such as the skull may cause no damage even if it were at high levels, but when dynamic pressure waves pass through the brain at speeds of $\frac{1}{1,500}$ second or less, shear and tear of tissue may take place in their path, and experimental and clinical work supports this concept.

WEIL'S DISEASE

Observations in Sixty-One Cases with Special Reference to the Use of Penicillin in Six Cases

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Olaa, Hawaii, T. H.

A complete discussion of Weil's disease will not be attempted in this paper. In a previous paper[1] I gave a general report of observations in 37 cases of Weil's disease, and another paper[2] now ready for publication reports observations in a larger series of 61 cases. Only such general considerations as are necessary to bring out points in the management and treatment of this disease will be discussed in this presentation.

To the average physician the term Weil's disease suggests infectious (spirochetal) jaundice, but since nothing like all patients ill with this disease show jaundice the newer term leptospirosis is probably preferable. However, due to common usage the term Weil's disease will be used throughout this paper. This disease is probably not nearly as uncommon or as severe in the Western Hemisphere as the medical literature indicates. An editorial in The Journal of the American Medical Association of Oct. 11, 1941[3] stated that only 67 cases of this disease had been reported in the American literature, with different writers reporting a mortality rate from 5 per cent to 40 per cent or about 30 per cent in cases with jaundice. In 1941 Larson[4] reported 51 cases from various parts of the United States and Puerto Rico, some of which may have been included in the 67 cases mentioned previously. Lester and his co-workers[5] in 1942 reported 14 cases; in 1943 Bruno and his co-workers[6] reported 15 cases, and in 1944 Patterson[1] reported 37 cases. A number of reports of smaller groups of cases have been made since 1941, but probably the total number of cases reported in the American literature is less than 300. Since the literature is made up of reports of a few cases from widely scattered areas it would be expected that 1 death would cause the mortality rate to appear unduly high; likewise, the physician treating an occasional patient would possibly not always institute the treatment program most likely to result in recovery. The latter point in my belief is certainly true, since I consider that the best single step in the treatment of the patient severely ill with Weil's disease is to give whole blood transfusions from donors who have recovered from this disease. Such transfusions would not be generally available, since so few cases are on record in the average community. In the 61 cases on which this report is based there was not a single death. I do not believe that this lack of mortality is due to any lessened virulence of the Leptospira icterohemorrhagiae in this area, because I have seen a death from this disease in a neighboring district and have had reports of other deaths in the Territory of Hawaii. Likewise 6 of the patients in this series were desperately ill, apparently to a degree similar to that of the patient in the average case outlined in the literature. Probably with a few exceptions, only the relatively small number of exceedingly severe cases are being diagnosed as Weil's disease, leading to the conception that the disease is both severe and infrequent. It is considered that the treatment instituted in the 6 severely ill patients of this series saved the lives of some of them and that the treatment given to the remaining 55 patients prevented some of them from becoming severely ill. Undoubtedly, one reason why such a large series of cases of Weil's disease can be reported with no deaths is the fact that most of the patients were mildly ill. Only because of my increasing clinical experience with the disease were their cases ever correctly diagnosed. It is felt that nearly all instances of anicteric Weil's disease are being diagnosed as influenza or some other disease and that the illness of many of those patients who become mildly jaundiced is never correctly diagnosed because of the lack of laboratory facilities, because the proper laboratory tests are not performed or because the patients recover and return to work before the laboratory tests are completed or repeated. No attempt will be made in this paper to discuss the merits of the various laboratory procedures used in the diagnosis of Weil's disease. The procedure I consider most reliable is a rising titer shown in microscopic blood serum agglutination tests on specimens taken at weekly intervals during the illness and in the convalescent period. Such a test was positive in each of the 61 patients of this series in dilutions of at least 1 : 300; in all but 5 patients the agglutination tests were positive in dilutions of 1 : 1,000 or higher, and in all the patients on whom the tests were repeated either there was a rising titer or the titer was extremely high (1 : 10,000 or higher) in all tests. All the agglutination tests were performed by Dr. J. E. Alicata of the Parasitology Laboratory of the University of Hawaii.

The blood serum agglutination tests are performed on the first, eighth and fifteenth days after admission to the hospital. Often the patient has been discharged and must return for the tests on the fifteenth day after admission. The tests are negative on the first day, usually show no titer or a low titer on the eighth day and show a high titer or an increasing titer on the fifteenth day. In leptospirosis due to L. icterohemorrhagiae these tests will always be positive with the procedure now being used in the Parasitology Laboratory of the University of Hawaii. If an infection should be due to other strains of the Leptospira, specific antigens must be used. As brought out in a general report[2] I consider that it is possible that occasional infections with other strains of the organism do occur in this area, but they are rare and not of practical importance in this report. With a laboratory test that is about 100 per cent efficient in the final diagnosis of Weil's disease, it is felt that this test should be used and relied on in preference to tests for Leptospira in the blood and urine or inoculation of laboratory animals with urine or blood or their concentrates. It is true that in the average infection in this area the patient is nearly well of his disease when the laboratory tests confirm the clinical diagnosis, or at least the patient has passed through the stage when early, adequate treatment will modify the disease. However, all other laboratory tests which are available, and which are less efficient, in a majority of cases are not positive until the golden period for institution of the proper treatment has passed, namely, the first few days of the illness. I believe and have tried to clearly report[7] that the diagnosis of Weil's disease should be made on the basis of the early clinical signs and symptoms and that treatment should be begun on the first day of admission to the hospital. If the clinician will have a highly suspicious frame of mind he can make this diagnosis on the first day. The average patient presents a picture of moderately severe influenza with decided conjunctival and scleral engorgement. If the clinician remembers just this much he will usually make the correct diagnosis. The ocular signs are the key to the diagnosis of Weil's disease in the early stage. In more detail, the average patient will have on admission generalized malaise, anorexia, headache (usually frontal), chills, generalized muscular tenderness and weakness (often severe in the calf muscles), a listless and toxic appearance and the classic ocular signs of decided conjunctivitis and scleritis. The eyes will appear soiled and will vary from pink to red with a cyanotic hue and with no discharge or secretions. In the average patient there will be no jaundice or bleeding or enlargement of the liver or spleen on admission. The temperature may be as high as 104.2 F. but will average 101 F., while on the average the pulse rate will be 91, the respiratory rate 22, the white blood cell count 11,704 with no significant differential change, the red blood cell count between 3.5 and 4 million and the hemoglobin 65 to 70 per cent, with the urine showing 1 plus albumin and no cells or casts. If this composite picture is kept in mind, with emphasis on the ocular signs and with attention being paid to the occupation of the patient, the diagnosis of Weil's disease can be made within a few hours after admission and treatment can be started at once. This point cannot be overemphasized. The final diagnosis is established by the blood serum agglutination tests on the fifteenth day.

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[1] Patterson, H. M.: Weil's Disease: A Report of Thirty-Seven Cases, Hawaii M. J. **3:** 213-221 (May-June) 1944.

[2] Patterson, H. M.: Weil's Disease: Observations Based on Sixty-One Cases, to be published.

[3] Weil's Disease, editorial, J. A. M. A. **117:** 1266-1267 (Oct. 11) 1941.

[4] Larson, C. L.: Weil's Disease: Report of Fifty-One Cases in Puerto Rico and and the United States, Pub. Health Rep. **56:** 1650-1656 (Aug. 15) 1941.

[5] Lester, B. F.; Denison, G. A.; Posey, L. C., and Tale, G. M.: Weil's Disease: Clinical and Epidemiological Report of Fourteen Cases, South. M. J. **35:** 325-332 (April) 1942.

[6] Bruno, F. E.; Wilen, C. J. W., and Snavely, J. R.: Spirochetal Jaundice: Report of Fifteen Cases, J. A. M. A. **123:** 519-524 (Oct. 30) 1943.

Table 1.—*Length of Illness and Other Data, Broken Down According to Special Treatment Received; All Patients Received the Same General Treatment*

Special Treatment	No. of Patients	Day in Hospital Temperature First Dropped to Normal (Average)	Day in Hospital Temperature Remained Normal (Average)	Days in Hospital (Average)	Days from First Symptom to Discharge from Hospital (Average)
Entire series (as below)	61	4.2	5.5	12.08	15.28
No special treatment	44	3.8	6.0	9.00	12.16
Sulfathiazole ...	7	7.8	9.7	19.30	21.50
Sulfathiazole plus whole blood from donors who had not had Weil's disease previously	1	2.0	22.0	38.00	40.00
Sulfadiazine plus whole blood from donor who had previously had Weil's disease	1	4.0	31.0	35.00	36.00
Whole blood from donors who had previously had Weil's disease	2	7.5	7.5	18.00	20.00
Penicillin	6	4.17	5.5	9.00	12.28

Between Oct. 1, 1941 and April 16, 1946 61 patients with proved cases of Weil's disease were admitted to the Olaa Hospital at Olaa, Hawaii, T. H. All 61 patients came to the hospital for treatment of a clinical illness, and each presented signs and symptoms suggestive of Weil's disease, the diagnosis being confirmed in every case by microscopic blood serum agglutination tests with L. icterohemorrhagiae antigen. All the patients, except 1 who come from a bordering ranch, were residents of the Olaa district of the island of Hawaii, which has a population of 7,500. The entire treatment of the 61 patients was carried out in one hospital under my direction. The treatment regimen has evolved during the four and one-half years of this study, and it is not claimed that the final answer has yet been found.

TREATMENT WITH SULFONAMIDE COMPOUNDS

The first 3 patients of the series were so ill that it was decided to treat them with sulfathiazole, 1 Gm. every four hours, this being continued for from three to ten days. Thereafter, courses of sulfathiazole, 0.5 to 1 Gm. every four to six hours according to the weight of the patient, were given to 5 other patients for from three to ten days and sulfadiazine, 1 Gm. every four hours for two days, was given to 1 patient. All these patients grew progressively worse while receiving this medicament, and thereafter it was not used again. See table 1 for comparable data with other special treatment programs. It is only accurate to state that of the 9 patients who received a sulfonamide compound 6 were decidedly ill, and a longer hospital stay would normally be expected for them than for the average patient in this series. However, when the sulfonamide therapy was stopped in 3 of the more seriously ill patients and blood transfusions were given improvement was so prompt that it was felt that medication with the sulfonamide drugs had been of no value.

TREATMENT WITH BLOOD TRANSFUSIONS

After sulfathiazole had been discontinued in the second patient of the series it was decided to give him transfusions of whole blood. No donors who had been proved to have had Weil's disease were available, so other donors were used. Improvement was definite but slow after the first transfusion of 550 cc. of citrated blood, so two other such transfusions were given with slow but certain improvement. At this point it was decided that whole blood from donors who had had Weil's disease should be the best treatment in future severely ill patients. The early cases were grouped closely together and the patients were all so ill that it was felt too hazardous to complicate their convalescence by using them as donors. Specimens of blood from all patients were typed and were Kahn tested. Patient 28 of the series was desperately ill and lost 30 pounds (13.6 Kg.) during his illness. On the ninth hospital day he was given 500 cc. of citrated blood from a donor who had had Weil's disease fourteen months before and whose blood titer had been 1 : 30,000 on his recovery at that time; the titer was not determined again at the time when blood was taken. Patient 28 was bleeding from the mouth and nose, was vomiting all food and liquids and was desperately ill when the blood transfusion was given. Thereafter he did not vomit, had no bleeding, became alert and proceeded to get well. The change was prompt and dramatic.

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[7] Patterson, footnotes 1 and 2

TABLE 2.—*Treatment of Six Patients with Penicillin*

Patient	Days Ill Before Admission	Jaundice	Bleeding Before Admission	Bleeding in Hospital	Penicillin Sodium Intramuscularly	Temperature (F.) on Admission	Hosp. Day Temp. First Reached Normal	Hosp. Day Temp. Remained Normal	Days in Hospital
56	6	Scleral, mild	Epistaxis	....	15,000 U. every 3 hrs. for 53 doses	103.6	7	7	9
57	1	....	....	Epistaxis	15,000 U. every 3 hrs. for 40 doses	104.0	7	7	10
58	3	....	....	Hemoptysis	15,000 U. every 3 hrs. for 48 doses	102.0	6	6	11
59	5	Scleral, mild	....	Epistaxis	15,000 U. every 3 hrs. for 32 doses	99.0	2	2	6
60	1	....	....	....	15,000 U. every 4 hrs. for 36 doses	104.0	2	6	9
61	4	....	....	....	15,000 U. every 3 hrs. for 48 doses	104.0	1	5	9

Patient 47 was desperately ill on the seventh day in the hospital and insisted that she was going to die. She was extremely toxic, her jaundice was deepening and she was vomiting everything taken orally. A blood transfusion was started, using as the donor a man who had had Weil's disease two months before and whose blood titer was 1 : 30,000 at the time of the transfusion. After receiving 300 cc. of citrated blood the patient had a severe chill, which lasted thirty minutes. Thereafter she felt better and ate her supper without vomiting. The following day she was given the remaining 250 cc. of the transfusion which had been started the preceding day. She had no chill and was laughing before the transfusion was finished; her temperature dropped to normal the same day and did not rise again. She ate heartily thereafter and said she felt that a miracle had happened to her. She went home six days later.

Patient 50 was deeply jaundiced on admission and was weak and listless. He vomited everything taken by mouth. His liver was enlarged, and he was spitting blood. These symptoms progressed, and on the third day he was given 550 cc. of citrated blood from his brother, who had had Weil's disease two years and one month previously and whose blood titer was only 1 : 100 at the time of the transfusion. The patient had a slight chill which lasted ten minutes immediately after the transfusion, and he vomited. Thereafter he felt better; his temperature dropped to normal within twenty-four hours and did not rise again. However, he was not discharged until eighteen days later because of the deep jaundice, which slowly faded, and because of the enlarged liver. He had no bleeding from the mouth after the transfusion.

Much is written of developing a serum or obtaining serum from biological houses for the treatment of Weil's disease. Walch-Sorgdrager,[8] Taylor and Goyle[9] and nearly every textbook discussing this disease emphasize this type of treatment. Patients with the disease need not only serum but red blood cells and all the constituents of whole blood. In this entire series the average lowest red blood cell count was 3,755,000 and the average lowest hemoglobin was 66 per cent. In those patients who were jaundiced the average lowest red blood cell count was 3,331,000 and the average lowest hemoglobin was 64.8 per cent. All the patients of this series have had their blood typed and Kahn tested and in my opinion constitute the best source of transfusion for the treatment of future severely ill patients with Weil's disease in this area. Several of them have given blood to patients with this disease in neighboring districts, with prompt improvement of the recipients. See table 1 for comparable data with other specific treatments. In consulting this table it should be kept in mind that the patients who received blood transfusions as well as those who received the sulfonamide compounds were the most severely ill patients of the series, in whom a longer hospital confinement would be expected.

PENICILLIN THERAPY

In February 1944 Heilman and Herrell of the Mayo Clinic[10] reported good results with penicillin in the treatment of experimental infections of leptospirosis due to L. icterohemorrhagiae in guinea pigs and suggested that this drug should be effective in the treatment of such infections in man. Augustine and his co-workers[11] in September 1944 after experimental use of penicillin in laboratory animals concluded that penicillin has a suppressive effect on L. icterohemorrhagiae in a highly susceptible host when given before the appearance of clinical symptoms. These workers did not expect it to be effective after the development of clinical symptoms. In March 1945 Larson[12] of the United States Public Health Service in a similar study with young Swiss mice found that penicillin had a definite therapeutic effect on the course of the disease when administered in the first forty-eight hours, but thereafter its effectiveness was materially decreased. He also treated a comparable group of mice with immune serum and found it equally as effective as penicillin.

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[8] Walch-Sorgdrager, B.: Leptospirosis, Bull. Health Organ., League of Nations **8:** 143-386 ,1939.

[9] Taylor, J., and Goyle, A. N.: Leptospirosis in the Andamans, Indian J. M. Research (Memoir no. 20) March 1931, pp. 1-190.

[10] Heilman, F. R., and Herrell, W. E.: Penicillin in the Treatment of Experimental Leptospirosis Icterohaemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **19:** 89-99 (Feb. 23) 1944.

[11] Augustine, D. L.; Weinman, D., and McAllister, J.: Penicillin Sodium Therapy in Experimental Weil's Disease, New England J. Med. **231:** 358-359 (Sept. 7) 1944.

In line with these reports I have treated the last 6 patients of this series with penicillin, beginning on the first day of the illness in each case. Sodium penicillin dissolved in isotonic solution of sodium chloride was used intramuscularly (table 2). In none of these patients treated with penicillin were the liver or spleen enlarged. The temperature dropped by crisis in patients 58 and 59 and by lysis in the other 4. These 6 patients presented a clinical picture on admission corresponding to the average for the entire series. With 2 of these patients showing mild jaundice and with 1 showing epistaxis before admission and with 2 showing epistaxis after admission and 1 showing hemoptysis after admission, it might have been expected that 1 or 2 of these patients would have become much more severely ill than they did. It is definitely felt that penicillin therapy modified the course of the disease. Though table 1 shows that patients in the penicillin-treated group compare closely to those in the group receiving no specific treatment it is felt that on the average the latter were not as ill as the former.

GENERAL TREATMENT

Patients with Weil's disease should have good care by the nursing staff and close observation by the physician in charge. These patients need care similar to that given to patients with typhoid fever. The fluid intake must be watched closely and parenteral fluids given as needed; in this series parenteral fluids were required in 12 per cent of the cases. Attention to oral hygiene is necessary. The patient must be encouraged and reassured. Analgesics for the relief of headaches and generalized aches and pains should be used freely and in adequate doses, being required in 65 per cent of the cases in this series. Acetylsalicylic acid in 10 grain (0.65 Gm.) doses provides satisfactory relief of these symptoms. Twenty-two patients in this series required measures to combat constipation, enemas usually being used. Epistaxis was present in 33 per cent of the cases and required treatment ranging from ice compresses to postnasal packs. Vitamin K is given to all patients, 2 mg. by mouth daily, and if jaundice or bleeding occur 10 mg. is given daily hypodermically. Because of the almost constant anemia ferrous sulfate and extracts of liver are given by mouth. Capsules containing all of the vitamins are given in large dosages because of the generally poor intake of food and the great loss of body weight, which averaged 10.8 pounds (4.9 Kg.) in this series. Likewise, these patients need a liver-protecting and tissue-building diet, and in this series a high caloric, high carbohydrate, high protein diet has been used. Because the kidneys are potentially damaged and because the Leptospira does poorly in an acid urine, tablets of methenamine and sodium biphosphate, which contain 10 grains (0.6 Gm.) of each, are given every eight hours during the hospital stay and for one week after discharge. Other signs and symptoms which occur less frequently are treated as they arise. In general no treatment is required for the eyes during the acute phase of the illness, but attention should be called to the frequent ocular complications, principally iritis, iridocyclitis and uveitis, which require treatment as they develop from one month to one year or more after the acute illness. In from 20 to 25 per cent of the patients in this series such complications have developed.

PREVENTIVE MEASURES

In this series 51 of the 61 patients were cane cutters and most of the others were exposed to the hazards of the cane cutter. The answer to the mode of entry of the organism has not been found, but all such workers should drink only pure water, should protect their extremities and faces as much as possible from abrasions, should wash their hands thoroughly before eating lunch in the fields and should avoid rubbing the eyes or wiping sweat from the face with soiled hands. Measures that will destroy the rat and mongoose population of this area will probably cause the disappearance of Weil's disease. The development of a vaccine to be given to field workers in this area seems to be indicated. After release from the hospital the convalescent patient should be given methenamine and sodium diphosphate in large doses in order to help destroy the Leptospira, which are shed in the urine for many weeks.

SUMMARY

1. General observations of the management of 61 cases of Weil's disease are reported.

2. Sulfathiazole was used in 8 patients and sulfadiazine in 1 patient with no apparent benefit.

3. Three whole blood transfusions from donors who had not previously had Weil's disease were given to 1 patient, who obtained slow but progressive improvement after each transfusion.

4. Single transfusions of whole blood were given to 2 patients and two smaller transfusions to 1 patient, using donors who had previously had Weil's disease, with prompt and certain improvement in each instance.

5. Penicillin was used from the day of admission in the last 6 consecutive cases with apparently excellent results. None of these patients became severely ill, and their periods of hospitalization compare closely to those of the mildly ill patients of the series who received no special treatment.

6. The general measures for hastening recovery are outlined, and preventive measures are discussed.

CONCLUSIONS

1. All patients with Weil's disease are potentially dangerously ill and require the best of nursing and medical care of the type such as given to the patient with typhoid fever.

2. The use of transfusions of whole blood from donors who have had Weil's disease should be the sheet anchor in the treatment of the severely ill patient.

3. The administration of penicillin from the first day of hospitalization is recommended for all patients with Weil's disease.

4. The sulfonamide compounds do not appear to be effective against Weil's disease.

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[12] Larson, C. L.: [illegible] Effect of Penicillin and Immune Serum in the [illegible] Leptospirosis in Young White Mice and in Ho[illegible] 60: 319-323 (March 23) 1945.

MYOMETRIAL PHYSIOLOGY AND ITS RELATION TO PELVIC PAIN

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Many factors contribute to the presence of pelvic pain during menstruation. Attention in the present paper will be devoted primarily to the myometrium, though the person as a unit must always be considered. The present knowledge concerning human nonpregnant uterine contractions is based on extensive investigations on experimental animals supplemented by careful clinical observations and uterine pressure records from control, pregnant and dysmenorrheal patients. Intrauterine pressure records from the nonpregnant human uterine were first obtained by Moir,[1] who observed during menses that contractions occurred every two minutes and developed pressures as high as 100 mm. of mercury. No pain but a feeling of heaviness and discomfort occurred when uterine pressures of 120 mm. of mercury were present. In patients with severe dysmenorrhea, pressures of 150 mm. of mercury were recorded and vascular pulsations disappeared at 120 mm. of mercury. Bickers[2] showed that high uterine tone is associated with primary dysmenorrhea and that reduction in tone is associated with relief from distress.

The literature contains many references to neurogenic and myogenic types of dysmenorrhea; and it is generally accepted that acetylcholine and histamine are agents which could produce these types. Yet drugs such as "trasentin" (the hydrochloride of diphenylacetylaminoethanol) and "pavatrine" (beta-diethylaminoethyl fluorine-9-carboxylate hydrochloride), which are excellent spasmolytics to animal tissues exposed to acetylcholine, histamine or barium,[3] often fail to relieve the distress of dysmenorrheal patients. Why? As the first step in answering this question, it seemed advisable to determine whether acetylcholine and histamine would produce uterine contractions and pain in human beings.

Methods.—Uterine activity has been investigated with the aid of pressure tracings and electrouterograms. Balloons fastened to short sections of ureteral catheters size 4 were placed in the uterus and cervix and then connected to optical manometers of high frequency.[4] The recording systems and balloons were filled with fluid so that transmission of uterine pressure changes to the recording device was accomplished by displacement of less than 0.01 cc. of fluid. Accurate tracings could be obtained with only 0.1 cc. in the balloon, though usually 0.2 to 0.5 cc. was placed in the cervical balloons and 0.5 to 1 cc. in the uterine balloons. Advantages which this method offered included: (1) the use of exceedingly small balloons, (2) a minimal amount of foreign object reaction within the uterus, (3) opportunity to use multiple balloons and (4) ability to obtain true zero pressures and to appreciate the amount of tone present.

Previous efforts[5] to evaluate uterine activity by means of electrouterograms have been of limited value. In the present studies an electrocardiograph of the Einthoven type was adapted to move the photosensitive paper at slow speeds. Silver chloride-coated silver electrodes were placed either in the uterus and cervix or on the anterior and posterior lips of the cervix or in various positions on the skin of the patient. Clinically useful electrouterograms could not be obtained with extrauterine electrodes[6] but were obtained from electrodes inserted into the uterus and cervix (fig. 1, tracings 1 to 4). Interpretation of the electrouterograms from 28 patients frequently has supplied confirmatory evidence for the pressure records, but additional investigations will be required before full interpretation can be firmly established.

Production of Dysmenorrhea.—At various times in the menstrual cycle, especially during menses, acetylcholine and histamine have been injected intravenously into 6 control patients and 6 dysmenorrheal patients in amounts which produced definite discomfort, such as flushing, headache, intestinal contractions and tachycardia. Even though some injections were continued over a ten minute period none of these patients experienced the typical pain or distress associated with her menses or showed appreciable change in uterine activity (fig. 1, tracings 1 and 2).

Next in our attempt to intensify the symptoms of the dysmenorrheal patients and to produce them in the control patients, posterior pituitary preparations were injected intravenously. "Pitocin" (N. N. R.), even in doses which caused definite uterine activity (3, fig. 1), did not bring about any distress. In fact many of the patients felt better. "Pitressin" (N. N. R.), even in doses which supposedly had much less oxytocic activity than that present in the dose of "pitocin" given to the same patient, produced decided distress, definite uterine cramps and pains, increased amplitude and frequency of contractions and elevation of the uterine tone (4, fig. 1). There were similar observations in all 25 patients receiving "pitressin." In fact this preparation intensified or produced all the symptoms which that particular patient had experienced during her troublesome menstrual periods.

These observations suggest that effective uterine antispasmodics should have definite anti-"pitressin" activity toward the uterus. Drugs such as "trasentin" and "pavatrine" do not possess much anti-"pitressin" activity.[6] This may account for the disappointing clinical results with these drugs after preliminary pharmacologic studies seemed to offer so much.

The "pitressin" and "pitocin" used in these investigations were purchased on the open market.

From the Departments of Pharmacology and Obstetrics and Gynecology, University of Georgia School of Medicine.

Eli Lilly and Company, Frederick Stearns & Company and Ciba Pharmaceutical Products, Inc., have contributed to these investigations by their generous financial support.

Read in a symposium on "Pelvic Pain" before the joint meeting of the Section on Obstetrics and Gynecology and the Section on General Practice of Medicine at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

[1] Moir, C.: Recording Contractions of Human Pregnant and Non-Pregnant Uterus, Transactions of the Edinburgh Obstet. Soc. **54:** 93-120, 1934.

[2] Bickers, W.: Uterine Contractions in Dysmenorrhea, Am. J. Obst. & Gynec. **42:** 1023-1030, 1941.

[3] Samaan, K., and Saad, K.: An Experimental Study of Diphenylacetyldiethylaminoethanol Ester Hydrochloride, Quart J. Pharm. & Pharmacol. **11:** 679-691, 1938. Lehmann, G., and Knoefel, P. K.: Spasmolytic and Local Anesthetic Action of Some Derivatives of Fluorene-Carboxylic Acid and Related Compounds, J. Pharmacol. & Exper. Therap. **74:** 274-283, 1942.

[4] Hamilton, W. F.; Woodbury, R. A., and Harper, H. T., Jr.: Physiologic Relationships Between Intrathoracic, Intraspinal and Arterial Pressures, J. A. M. A. **107:** 853-856 (Sept. 12) 1936.

[5] Hasama, B.: Registration of Normal Action Current from Uterus. Arch. f. exper. Path. u. Pharmakol. **153:** 129-139, 1930. Falk, H. C., and Nahon, R.: Electrouterography, Am. J. Obst. & Gynec. **30:** 403-410, 1935. Jacobson, E.; Lackner, J. E., and Sinykin, M. B.: Electrical and Mechanical Activity of the Human Non-Pregnant Uterus, ibid. **38:** 1008-1020, 1939.

[6] Unpublished observations by this laboratory.

Comparison of 3, figure 1, with 4, figure 1, shows that some patients have had greater uterine activity after "pitressin" than after "pitocin" even though smaller doses of the former were injected. This confirms the observation of Moir.[1] Apparently bioassay methods for these preparations are unsatisfactory, since in these patients "pitressin" excited the uterus more than "pitocin" did. The fact that the onset of the stimulative action of the former was so rapid constitutes strong evidence that its uterine action was direct and not dependent on ischemia secondary to vasoconstriction.

Some dysmenorrheal patients experienced temporary relief after urination. It seemed reasonable that the relief might be caused by the partial emptying of the uterine contents during micturation. This suggested that the stretching of the uterus by the accumulation of clots and menstrual fluid and débris contributed to the distress of the patient.

The influence of stretching the uterus by distention of the balloon was investigated. Dysmenorrheal patients as a group tolerated less stretch than did control patients. Dysmenorrheal nulliparous patients tolerated from 0.4 to 5 cc. with an average of 3.5 cc., while control nulliparas tolerated from 3 to 7 cc. with an average of 5 cc. Factors which may have contributed to this low tolerance in dysmenorrheal patients included underdevelopment of the uterus, lowered pain threshold, greater uterine muscle tone and greater edema and congestion in the uterus. Parous patients as a group tolerated greater distention of the balloon. This may explain the disappearance of dysmenorrhea with the first pregnancy in some patients.

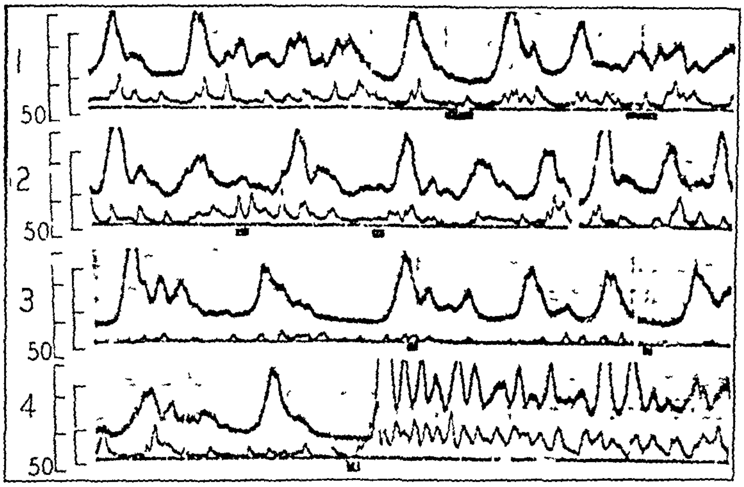

Fig 1 (tracings 1 to 4) —Pressure records and electrouterograms From above downward, tracings represent uterine pressure, electrouterogram, cervical pressure and base line interrupted at one minute intervals Pressure scale left uterine 50, 100, 150, 200 mm of mercury and right cervical 0, 50, 100 mm of mercury. These tracings, taken on the first day of menses when cervical biopsy indicated that ovulation had occurred, were secured from a patient who usually had slight but definite distress with her menses *Pronounced distress, but well within limits of tolerance, was induced by placing 3 cc.* of fluid in the uterine balloon and 0.5 cc in the cervical balloon Note that: (*a*) the uterine pressures are high (*induced by* placing 3 cc. of fluid in the uterine balloon); (*b*) the cervical and uterine pressures are not equal and the contractions may or may *not occur at the same time*, (*c*) the time durations of the cervical contractions are much shorter than those of the uterine contractions, and (*d*) electrical potential changes *occur during periods of* uterine activity

1 At each signal 9 mg of acetylcholine was injected intravenously in 1.8 cc of saline solution *Both injections, especially* the second which was more rapid, caused a flush, a smothering sensation in chest and cardiac acceleration from 70 to 90 and 110 per minute *The patient noticed no change in* uterine activity or in abdominal distress

2 At each signal 0.005 mg. histamine as histamine phosphate was injected intravenously. The patient noticed no change *in uterine activity or in* her abdominal distress, though she felt some fulness and throbbing in her head

3. At each signal 1 unit of "pitocin" was injected intravenously *The patient felt a* slight transient sense of warmth but did not experience abdominal distress.

4. At the signal, 1 unit of "pitressin" was injected intravenously. *This represents* less than 0.05 unit of oxytocic activity and supposedly less than one twentieth of the oxytocic substance injected while recording tracings in 3, figure 1. The patient *complained* of abdominal cramps and backache just like she had with her "bad monthly periods." After about ten minutes she felt about the same as before this last *injection. Note the* decided increase *in* uterine activity which starts *within 60 seconds* of the injection. Most of this time is required for circulation of the drug *from the cubital vein* to the uterus The fact that the onset of action is so rapid serves as strong evidence that the uterine stimulative action of this drug is direct and *not secondary to* uterine vasoconstriction

Pressure Records of Control and Dysmenorrheal Patients.—The balloons imitated clots and stretched the uterus, which caused increased uterine activity. No sharp line of demarcation could be observed between the uterine tracings of control and dysmenorrheal patients. However, definite differences were present. During menses in control patients contractions occurred once every 1.5 to 3 minutes and developed maximal pressures of 60 to 150 mm. of mercury. Between contractions pressures of 5 to 15 mm. were present, indicating good relaxation. The uniformity and regularity of the contractions as well as the good relaxation between contractions indicated that the uterus was contracting as a unit. It is suggested that these should be called well coordinated contractions. In 5, figure 2, tracings from a control patient show coordinated contractions. The phenomenon of summation and of a relative refractory period[7] are illustrated. In dysmenorrheal patients the contractions were the coordinated type with extremely high pressures (6, fig. 2), the poorly coordinated type with high pressures (7, fig. 2) or the uncoordinated type with low pressures (8, fig. 2). In the coordinated, extremely high pressure type, the uterine musculature contracted as a unit and pressures of 140 to 340 mm. of mercury were encountered Over a thirty minute period in 1 patient the pressures at the height of contractions averaged 230 mm. of mercury. These pressures greatly exceeded both those in the control patients and those of 40 to 90 mm. of mercury which are the limits of the maximal pressures developed by the uterus during parturition.[5] There is no doubt whatsoever that the pain of dysmenorrhea is real. It is not just psychic in such patients. The pressures between contractions were from 15 to 40 mm. of mercury in some patients and from 25 to 100 mm. in others. These uterine tone values were higher than the 5 to 15 mm pressures of the control patients

Uterine pressure pulsations corresponding in rate to the heart beat were observed in many patients. These pulsations frequently were reduced in amplitude or disappeared while the uterine pressure was elevated, but often they did not disappear even when the uterine pressure reached values much higher than the arterial pressure. Apparently, in some if not all patients these pulsations were transmitted directly from the throbbing abdominal aorta and did not represent pulsations of uterine blood vessels.

Contractions of short duration, which were generally not synchronous with contractions in surrounding portions of the uterus, have been named uncoordinated contractions. They frequently were superimposed on a background of coordinated contractions and at intervals they temporarily replaced them (fig. 3). When recordings were obtained for several hours poorly coordinated or uncoordinated contractions would become superimposed on the background of coordinated contraction in the control patients and would dominate the tracings of dysmenorrheal patients who originally showed just partial disorganization. Occasionally further distention of the balloon would bring about a temporary return of coordinated contractions.

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[7] Rudolph, L, and Ivy, A C Coordination of Uterus During Labor, Am J. Obst & Gynec **21**: 65 82, 1931

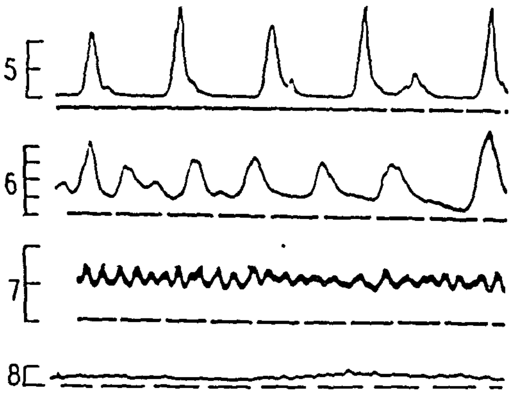

Fig. 2 (tracings 5 to 8).—Uterine pressure records from control and dysmenorrheal patients obtained on first day of menses. The base line was interrupted at one minute intervals. The pressure scale is in units of 50 mm. of mercury.

5. Uterine contractions from control patients are coordinated and good relaxation is present between contractions. The low tone between contractions and short periods of elevated pressure indicate that the balloon was in the lower uterine segment. A few accessory contractions occur. When these are present at the height of a contraction they elevate the pressure to abnormally high pressures. Only slight discomfort and no distress is present during these contractions.

6, 7 and 8. Tracings from 3 different dysmenorrheal patients: In tracing 6 poorly coordinated contractions are superimposed on coordinated contractions. Pressures are high during and between contractions. In tracing 7 poorly coordinated contractions dominate, indicating that incomplete tetany is present. The uterine tone is high and contractions fail to develop high pressure. However, the patient experienced much distress. In tracing 8 the pressures are not high yet the patient was experiencing severe pain while this tracing was being recorded.

The pressure at which patients complained of pain varied a great deal. When contractions were organized most patients complained of discomfort before pressures of 100 mm. of mercury were reached and of distress with pressures of 180 mm. of mercury. When contractions were disorganized and relaxation was inadequate, incomplete tetany (7, fig. 2) or complete tetany (8, fig. 2) developed. Under these conditions pain was present at pressures of 40 to 70 mm. of mercury. Extremely severe pain occurred while the tracing shown in 8, figure 2, was being recorded although pressures of only 20 to 30 mm. of mercury were present. It seemed advisable to determine whether such low pressures might be present in one part of the uterus while higher pressures were present at another level and were causing the pain.

Intrauterine Pressures in Different Parts of the Uterus.—Records were obtained simultaneously from three balloons inserted at different levels into the uterus and from one balloon inserted into the cervix. These tracings showed that the uterine pressure curves were different at various levels within the uterus both during coordinated contractions (fig. 4) and during uncoordinated contractions (fig. 5). Pain seemed to be present during uncoordinated contractions when pressures above 40 to 70 mm. of mercury occurred at any level within the uterus. As in the monkey,[9] uterine contractions are not peristaltic waves, in that no wave of relaxation precedes the contraction wave (fig. 4). Contractions may start in a region close to the juncture with the tubes,[8] yet the increase in pressure occurs first in the lower uterine segment and body of the uterus, then subsequently in the dome of the fundus. Downward from the dome of the fundus, the uterine muscles progressively contract faster and relax more completely. The musculature in the dome is slow to contract and even slower to relax (fig. 4). In menstruation as in parturition retraction of the lower uterine segment tends to occur. On the assumption that uterine contractions in labor and those in menstruation are similar, the records in figure 4 show that retraction of the uterus in parturition can be explained by the shorter contractions and the earlier and more complete relaxation of the muscles of the lower uterine segment as compared with those of the upper uterine segment.

The fact that different pressures exist in different portions of the uterus during menses allows coordinated contractions to propel clots and menstrual débris downward and to push arterial blood into the high pressure area of the dome of the uterus. The mechanisms by which these are accomplished and the influence of disorganized contractions on them will be described. When coordinated contractions occur during menses, relaxation brings about a large pressure gradient from the dome to the body of the uterus and from the body to the lower uterine segment (fig. 4, curves *A-B* and *B-C*). This means that débris is pushed downward within the uterus during the relaxation phase and not during the contraction phase. However, during the contraction phase there is a large pressure gradient between the lower uterine segment and the cervix, which moves débris into the cervix and thence into the vagina (fig. 4, curves *C-D* and *D*).

In patients with coordinated contractions, relaxation occurs between contractions and the strong uterine activity, though painful, will push débris and clots down and out of the uterus in the manner previously described. Contractions then may become reduced in intensity, and relief is obtained. In patients with disorganized contractions, relaxation between contractions is inadequate. Strong contractions develop sufficient pressure to clear the lower uterine segment but fail to

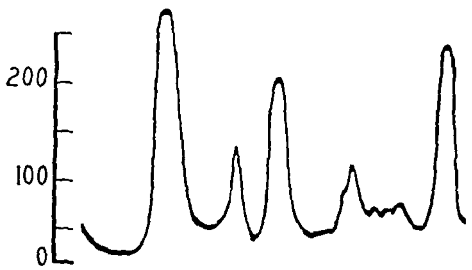

Fig. 3.—Uterine pressure record from patient with severe dysmenorrhea. This tracing is interesting in that the first contraction occurs after a period of adequate relaxation. Note the high pressure developed during this contraction. Severe distress was present during this contraction after the pressure was above 175 mm. of mercury and until it had decreased to 75 to 100 mm. of mercury. A short period of incomplete tetany at the right shows that poorly coordinated contractions were superimposed and replacing the coordinated contractions. Distress present during the period of incomplete tetany was severe but less so than that *at the height of the first contraction.*

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[8] Woodbury, R. A.; Hamilton, W. F., and Torpin, R.: Relationship Between Abdominal, Uterine and Arterial Pressure During Labor, Am. J. Physiol. **121**: 640-649, 1938.

[9] Ivy, A. C.; Hartman, C. G., and Koff, A.: The Contractions of Monkey Uterus at Term, Am. J. Obst. & Gynec. **22**: 388-399, 1931.

produce sufficient pressure to remove débris adequately from the body and dome of the fundus (fig. 5 and right half of fig. 4). Contractions continue, and dysmenorrhea of the type illustrated in 6, fig. 2, develops. This may continue, or the débris may be moved and relief obtained, yet in many of these patients there soon develop definitely disorganized contractions like those illustrated in 7, figure 2, or 8, figure 2.

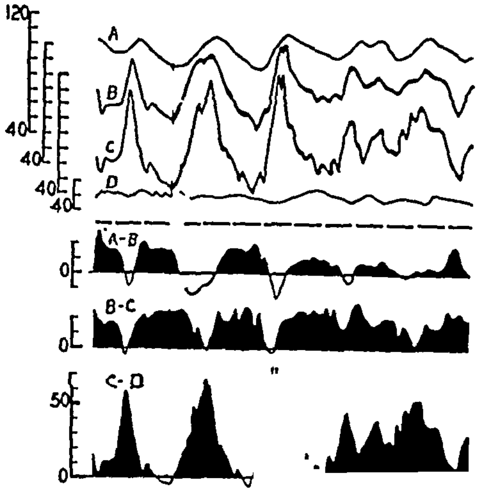

Fig 4.—Pressure records were obtained simultaneously from four balloons placed within (*A*), the dome of the fundus, (*B*) the body of the uterus; (*C*) the lower uterine segment, and (*D*), the cervix. The curves were replotted to the same pressure scale, with each curve lifted the amount indicated at the left in order to prevent superimposition of lines. The pressure increases in the lower uterine segment and lower portion of body of uterus start earlier, occur more rapidly and are shorter in duration than those in the dome of the fundus. Curves *A — B*, *B — C* and *C — D* are differential pressures which show the pressure gradients between the dome and body of the fundus (*A — B*), between the body of the fundus and the lower uterine segment (*B — C*) and between the lower uterine segment and cervix (*C — D*). These differential pressures are the pressures which influence the passage of clots and debris. The coordinated contractions at the left provide waves of propulsion even though the uterine tone is high. The poorly coordinated contractions at the right fail to supply a wave of propulsion. Note also that during the height of contractions the pressure in the dome of the fundus is lower than that in the body of the fundus. During this time the pressure gradient is reversed. (See negative pressure values on tracing *A — B*). To a slight extent this would interfere with outward propulsion of uterine content, but it facilitates blood flow from vessels in the body of fundus to vessels in the dome.

An interesting record was obtained in figure 5; the pain of the patient was intense and the contractions were disorganized in type. Uterine tetany was present and pressures in the dome and body of the uterus were low, while pressures in the region of the third balloon, located in the lower uterine segment, were high. This might well be called a constriction ring during menstruation or a spasm of the isthmus, or it could result from an exceptionally long cervix. It would definitely interfere with the downward flow of débris and could account for this patient's distress. The injection of "pitressin" produced extreme distress and caused intense disorganized contractions of muscles in the dome and body of the uterus but did not further elevate the high pressure in the lower uterine segment. The pressures in the dome and body of the fundus approached but still did not reach those in the lower uterine segment. Apparently the musculature of the isthmus was already near maximal disorganization and maximal contractions, while the muscles in the dome and body had developed some inertia secondary to fatigue and insufficient blood supply.

During coordinated contractions the slow and incomplete relaxation in the dome should interfere with the blood supply to this area because the pressure remains high in this area. In 1 patient pressure in the dome remained over 260 mm. of mercury for more than three hours. The blood pressure was 130 systolic and 90 diastolic. How did the tissues in the dome of the uterus obtain their blood supply? The following mechanism appeared to be responsible. Between contractions adequate relaxation occurred in the body of the fundus of the uterus and in the lower uterine segment, and arterial blood could flow into vessels in these areas. During contractions the pressures in these regions exceeded that in the dome by 30 to 40 mm. of mercury (fig. 4) and squeezed some arterial blood up into the vessels of the dome since the wave of contraction passes upward toward the dome.

In monkeys during uterine contractions the areas in the regions of the juncture of the tubes and uterus have been observed to show no blanching during uterine contractions.[9] In view of the observation that uterine pressures differ at different levels within the uterus, this localized lack of blanching in the monkey could be evidence that contractions of the uterus of the monkey also serve to facilitate arterial blood flow to all portions of the uterus.

Though myometrial activity is an important factor in the distress of dysmenorrhea, the amount of edema, congestion, vasoconstriction, tissue fragility, heightened tissue irritability and fibrinolysis of menstrual débris are also important physiologic factors.

SUMMARY AND CONCLUSION

Dysmenorrhea can be produced in control patients and intensified in dysmenorrheal patients by intravenous injections of small quantities of "pitressin" and by stretching the uterus or cervix. It could not be produced with intravenous injections of acetylcholine, histamine or "pitocin" in quantities which produced definite side actions.

In some patients "pitressin" has greater uterine stimulative action than "pitocin." Hence, the present bioassay method of these preparations is misleading.

Summation, relative refractory period and incomplete and complete tetany were observed in the human uterus.

Uterine pressures at which patients complained of pain varied a great deal. When contractions were coordinated, discomfort usually occurred at a pressure near 70 to 100 mm. of mercury and distress appeared near a pressure of 140 to 180 mm. of mercury. In the presence of incomplete or complete uterine tetany, pain always was severe at much lower pressures; usually severe pain occurred with pressures of 40 to 80 mm. of mercury.

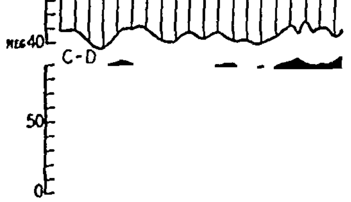

Fig 5.—Uterine pressure curve showing constriction ring during menses. The curves were obtained from use of multiple balloons and were replotted as in figure 4. Compare curves *C* of figures 4 and 5. Note that constriction rings seem to occur during menstruation. *The downward propulsion of* menstrual debris is prevented by the constriction ring.

Pressure records secured from different levels of the uterus showed definite differences. The shortest contractions were observed in the region of the cervix. The musculature in the dome of the fundus is slow to contract and even slower to relax. Downward toward the lower uterine segment, the musculature progressively contracts faster and relaxes faster and more completely. As a result uterine pressure levels are different at various levels within the uterus. Débris is pushed outward within the uterus during relaxation and not during contractions.

Disorganized contractions fail to propel menstrual débris downward within the uterus In some patients the disorganized contractions develop a constriction ring which further obstructs the outflow of débris.

It was found necessary to use intrauterine electrodes to obtain electrouterograms which showed a relationship to the uterine activity.

ABSTRACT OF DISCUSSION

Dr. M. Pierce Rucker, Richmond, Va No other organ in in the body is so capricious as the uterus There is a tremendous species variation in its behavior In the human being the least change in the environment of the uterine fiber makes a difference. The behavior of the uterus varies with the time of the menstrual cycle and with the stage of pregnancy. For instance, the response of the parturient uterus to posterior pituitary injection varies greatly according to whether it is given antepartum, intrapartum or postpartum Nor can one predict what the behavior of the intact organ will be, from the action of strips of isolated muscle Furthermore, different parts of the uterus behave differently This has been known to be true for the pregnant uterus for some time So far as I know this is the first time that it has been shown to be true for the nonpregnant organ. One might pursue this line of thought further by showing how certain drugs change the response of the uterus to other drugs. I mention this to show how important are careful studies on the intact uterus, such as the report which was heard today. I was interested to see that Dr. Woodbury and his associates' work confirms that of Bickers, who showed that increased tone between contractions was found in dysmenorrhea. They have gone further and shown that the nonpregnant uterus may contract in a regular orderly manner which they called organized contractions or in a disorderly or disorganized manner. The latter type is also associated with dysmenorrhea The orderly type, as I understood from the paper, is associated with dysmenorrhea only when the tone of the muscle is increased They demonstrated a constriction ring in a dysmenorrheic uterus. I have been interested in constriction rings in the parturient uterus for years. In labor such rings are found in the uterus that contracts in an irregular manner: another phenomenon which the parturient and the menstruating uterus have in common. I am not surprised that they found no effect from acetylcholine. I have tried this drug in uterine inertia without noticeable benefit. Perhaps the greatest surprise, aside from the demonstration of a constriction ring in a menstruating uterus, is that the nonpregnant uterus may contract with more force than the uterus in labor: And yet when one considers the relative thickness of the wall of the pregnant and nonpregnant uterus one should not be surprised. The authors are to be congratulated on their work.

Dr. A. R. Abarbanel, Beverly Hills, Calif.: I want to join with Dr. Rucker in congratulating Dr. Woodbury and his associates for an ingenious and remarkable piece of work. They have shown, along with Moir, that a uterine contraction leading to anoxemia of the uterine muscle can be associated with severe pain. I think that they might also have gone a little further and tried to duplicate the experiments of Robertson, who showed that by injecting sterile water in a tense nervous patient, spasmodic contractions of the uterus might result. Prolonged labor may be caused by what is considered to be myometrial dyskinesia or disorganized myometrial contractions. Clinically, it has been shown by several investigators that estrogen plays a distinct and favorable role in this condition. As a matter of fact, the effect of estrogen on the uterine muscle in disorganized contractions might be compared with that of digitalis on the heart in a similar condition. I would like to raise the question of the influence of various hormonal substances. For example, it has been noticed in hypertonicity of the uterotubal junction in the human subject that methyltestosterone sublingually in the form of "linguets" would abolish the spasm of the uterotubal junction as well as reduce the hypertonicity to normal values. In cases in which spasmodic dysmenorrhea was present, dysmenorrhea was usually relieved. It is believed that this hormonal substance acts directly on the myometrium. I too have found that the pattern of uterine contractions in the pregnant uterus during labor is essentially the same as that reported by Dr. Woodbury this morning. Further, I also found that the top portion of the corpus uteri contracts first and relaxes last, while the lower portions of the corpus contract last and relax first. As a result, it is clearly evident that the contractions of the human uterus in labor are patterned so that eventual expulsion of the fetus finally results.

Dr. William E. Hunter, Los Angeles: There are three factors that should be considered in the production of pain in dysmenorrhea: (1) the pain threshold; (2) the physiologic changes associated with ovarian activity, and (3) the sensory conditioning process. The pain threshold varies in different persons. As a rule women with dysmenorrhea have lower pain thresholds. They are more sensitive to painful stimuli during adolescence, reproductive life and the menopause. Ovulation produces certain physiologic changes, such as elevation of temperature, tissue edema, fragility of the blood vessels, irritability of the nervous system and muscular tension. All ovulating women feel these changes if they look for them. About 50 per cent are conscious of them, but only 5 per cent consult their physicians for relief. One only sees those patients who are somewhat incapacitated. The sensory conditioning process is a method of learning. By repetition one learns to read, and just so the dysmenorrheic woman learns to pick up subnormal stimuli and becomes sensitized to them. If an electrode is placed on the arm and the subject is instructed to break the circuit when pain is felt, after five hundred trials she will begin to feel pain when no stimulus is sent through the apparatus. If the experiment is repeated with stimuli above the pain threshold level, there is a conditioning to pain and in time the patient will complain of severe pain at the threshold level or even below. Is it not true that the perception and reaction to pain can be changed psychically by raising the pain threshold? I believe that many of the cures obtained by diverse types of treatments for dysmenorrhea are accomplished by suggestion. If the treatment is dramatic and the patient is led to believe in its efficacy either by injections or by dilation of the ureter, urethra or cervix, as I have done in many cases, the patient is relieved. She is temporarily cured by suggestion. For that reason I think that much of the work being done to relieve pain follows the old dictum, "Here is your trouble, now I remove it, now you are well."

Diphtheria in Partially Immune Persons.—It is probably a safe statement that the average American physician, who constituted the bulk of the medical corps since the days of mobilization, was initially not well acquainted with clinical diphtheria. His concept of the pharyngeal lesion was that of childhood diphtheria commonly found in textbooks. Diphtheria in partially immune persons, and accordingly that of many adults, is often somewhat different. During the course of the war this was probably first observed during a diphtheria epidemic in a prisoner of war camp at Aliceville, Ala. Here it was noted that "less than one third of the diseased throats were suggestive of diphtheria, while more than one half the lesions were, those of follicular tonsillitis."—Schulze, Hartwin A.: Diphtheria in the U. S. Army in Europe, *M. Bull.*, June 1947.

Special Article

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1946

Thirty-Third Report

In conformity with the practice adopted in previous reports a communication was addressed to the health officer of each of the cities requesting the number of deaths from typhoid, excluding paratyphoid, both among residents and among nonresidents as recorded for 1946. The health directors of many cities keep no data on reallocations for residence, and this information can be secured only from the state health department, whose figures are not available until several months after the close of the calendar year. In some instances multiple inquiries brought forth irreconcilable replies. Too frequently the reporting of deaths is left to subordinate employees, and carelessness is evident. The health officer should give final approval to statistical data released by his department. A few health officers seem to have no knowledge of how many typhoid deaths have occurred in their community, and it becomes an increasing struggle to obtain accurate data. The possession of basic data seems paramount to the establishment and operation of an adequate local health service.

Table 1.—*Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Cambridge..........	0.0	0.0	0.0	0.2*	0.8	2.1	4.3	2.5	4.0	9.8
Fall River............	0.0	0.0	0.0	0.2	0.2	2.2	2.3	8.5	13.4	13.5
Lynn................	0.0	0.0	0.0	0.2	0.2	1.5	1.6	3.9	7.2	14.1
Springfield..........	0.0	0.0	0.0	0.3*	1.1†	0.4	2.0	4.4	17.6	19.9
Hartford............	0.0	0.0	0.0	0.5	1.0†	1.3	2.5	6.0	15.0	19.0
Somerville..........	0.0	0.0	0.0	0.6	0.4	1.3	1.6	2.8	7.9	12.1
Worcester.....	0.0	0.0	0.1	0.2*	0.5*	1.0	2.3	3.5	5.0	11.8
Bridgeport..........	0.0	0.0	0.1	0.4	0.3	0.5	2.2	4.8	5.0	10.3
Lowell..............	0.0	0.0	0.2	0.4	1.2	2.6	2.4	5.2	10.2	13.9
Providence...	0.0	0.0	0.2†	0.6	1.1†	1.3	1.8	3.8	8.7	21.5
New Haven....... ...	0.0	0.0	0.2†	1.0	0.7†	0.6	4.4	6.8	18.2	30.8
Waterbury....	0.0	0.0	0.8	0.2	0.4	1.2	1.0	8.0	18.8	....
Boston..............	0.0	0.1	0.1	0.3†	0.6	1.2	2.2	2.5	9.0	16.0
New Bedford....... .	0.0	0.9	0.2	0.4	1.1	1.5	1.7	6.0	15.0	16.1

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.

For most of the cities of 100,000 population or more the Bureau of the Census has no estimates of population for dates since 1940. There are figures for a few of these cities, based on special censuses or sample censuses for various dates since 1940. Special censuses were conducted for Long Beach, Los Angeles, Oakland and San Diego in 1946. The Bureau of the Census has released a population estimate for Washington, D. C., as of July 1, 1946. Sample censuses were taken in 1944 for Detroit, Norfolk, Portland, San Francisco, Seattle and Tacoma. (A special census was taken in San Francisco in August 1945.) Estimates of the civilian population of counties are available for March 1 and Nov. 1, 1943, based on registrations for war ration books 2 and 4. Some of the cities (Baltimore, Denver, New Orleans, New York, Norfolk, Philadelphia, Richmond, St. Louis, San Francisco, Washington) are coterminous with their counties and the figures given in the releases are city as well as county estimates. Since for the vast majority of cities no official figures are available for any date subsequent to that of the 1940 federal census, it has again been deemed advisable to employ the populations determined by this uniform tabulation. For those cities for which special census figures are available, corrections in rates have been shown in footnotes. In most instances there are no or only minor changes in the rates. In no instance has any rate been extended beyond the first decimal point, and it is realized that this practice creates a slight disadvantage for the extremely large cities which now have but a single death from typhoid (Detroit).

Table 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Yonkers.............	0.0	0.0	0.0	0.3	0.7	0.5	1.7	4.8	5.0	10.3
Erie................	0.0	0.0	0.0	0.7†	1.2	0.9	2.3	6.9	49.0	46.6
Albany..............	0.0	0.0	0.0	1.2†	1.2	1.8	5.6	8.0	18.6	17.4
Trenton.............	0.0	0.0	0.0	1.4†	1.1	2.1	8.2	8.6	22.3	28.1
Jersey City.........	0.0	0.0	0.1†	0.6	0.3	0.9	2.7	4.5	7.2	12.6
Paterson............	0.0	0.0	0.1*	0.7†	0.9	1.0	3.3	4.1	9.1	19.3
Buffalo.............	0.0	0.0	0.2	0.1	0.6	2.7	3.9	8.1	15.4	22.8
Reading.............	0.0	0.0	0.2	0.5	0.4	1.6	6.0	10.0	31.9	42.0
Syracuse............	0.0	0.0	0.3†	0.3*	0.8	0.8	2.3	7.7	12.3	15.6
Elizabeth...........	0.0	0.0	0.4	0.5	0.9	1.6	2.4	3.3	8.0	16.6
Newark..............	0.0	0.5	0.1	0.3	0.4	0.9	2.3	3.3	6.8	14.6
Camden..............	0.0	1.7†	0.5†	1.4†	2.7	4.4	5.9	4.9	4.5	4.0
New York............	0.1	0.1	0.1	0.3	0.8	1.3	2.6	3.2	8.0	13.5
Pittsburgh..........	0.1*	0.4	0.3	0.7	0.9	2.4	3.9	7.7	15.9	65.0
Philadelphia........	0.1	0.6	0.3	0.8	0.9	1.1	2.2	4.9	11.2	41.7
Rochester...........	0.3	0.0	0.1	0.3†	0.4	1.7	2.1	2.9	9.6	12.8
Scranton............	0.7	0.0	0.0	0.3	1.4	1.8	2.4	3.8	9.3	31.5
Utica...............	1.0	0.0	0.4†	0.2*	0.2	1.1	3.9#	...	...	....

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
# Incomplete data.

Table 3.—*Death Rates of Ten Cities in South Atlantic States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Charlotte...........	0.0	0.0	0.6†	1.6†	2.5	...	....	....	....	....
Miami...............	0.0	0.6	0.6	2.4	2.0	3.5	....	....	....	....
Jacksonville........	0.0	0.6	0.8	2.3	1.6	4.4	....	....	....	....
Atlanta.............	0.0	1.0†	0.5†	2.1†	7.3	11.1	14.5	14.2	31.4	58.4
Richmond............	0.0	2.1†‖	1.3†‖	2.5†	2.4	1.9	5.7	9.7	15.7	34.0
Baltimore...........	0.1	0.2†	0.3†	0.9†	1.4	3.2	4.0	11.8	23.7	35.1
Washington..........	0.9‡	0.3¶	0.4†¶	1.1	2.2	2.8	5.4	9.5	17.2	36.7
Wilmington..........	0.9	0.9*	0.2*	0.5	1.5	3.1	4.7	25.8#	23.2#	33.0
Norfolk.............	1.4*	0.7¶	0.3¶	1.1†	3.3	2.2	2.8	8.8	21.7	42.1
Tampa...............	1.8	1.8	1.8	0.6†	3.4	3.8	10.1	43.9#	....	....

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
# Incomplete data.
‖ 1943 special census gives rate of 1.8 for 1945 and 1.2 for 1941-1945 for Richmond.
¶ 1944 special census gives rate of 0.2 for 1945 and 0.3 for 1941-1945 for Washington and rate of 0.4 for 1945 and 0.2 for 1941-1945 for Norfolk.
‡ 1946 special census gives rate of 0.7 for 1946 for Washington.

Paratyphoid has again been excluded. Special note has been made of cities in which all deaths occur among nonresidents. In addition to the sixty-two cities enumerated on the honor roll in table 10, five cities (Birmingham, Norfolk, Pittsburgh, St. Louis, Spokane) are qualified for such acclaim but have been charged with typhoid deaths among nonresidents cared for in these cities.[6] In five other cities (Houston, Knoxville, Los Angeles, New Orleans, Tacoma) more than one

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The preceding articles in this series were published in The Journal May 31, 1913, p. 1702; May 9, 1914, p. 1473; May 17, 1915, p. 1322; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 777; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 860; March 25, 1922, p. 890; March 10, 1923, p. 691; Feb. 2, 1924, p. 389; March 14, 1925, p. 813; March 27, 1926, p. 948; April 9, 1927, p. 1148; May 19, 1928, p. 1624; May 18, 1929, p. 1674; May 17, 1930, p. 1574; May 9, 1931, p. 1576; April 30, 1932, p. 1550; May 13, 1933, p. 1491; May 19, 1934, p. 1677; June 8, 1935, p. 2093; June 6, 1936, p. 1983; June 19, 1937, p. 2118; July 30, 1938, p. 414; May 13, 1939, p. 1941; May 25, 1940, p. 2103; Jan. 17, 1942, p. 222; Aug. 8, 1942, p. 1188; Aug. 21, 1943, p. 1181, and July 6, 1946, p. 817.

third of the reported deaths were stated to have been among nonresidents. It is noteworthy that for the first time there is no city with a death rate in excess of 2.0, and thus the list of cities of second rank is completely omitted.

The number of cities with no typhoid death during the past two or more years has increased from twenty-five in 1941 and forty-one in 1945 to a new high of forty-nine in 1946 (table 9). Fort Wayne continues to head the list with no death in twelve years. Fall River and Lynn report no death in ten years, Cambridge no death in nine years Hartford, Springfield and Yonkers have clear records for eight years. South Bend reports no typhoid death among residents for eleven years.

The New England cities (table 1) (population 2,579,152) have set a new all time record with no deaths from typhoid in 1946. These cities have reported the lowest group rates in each of the quinquennial periods (table 13). The East North Central cities (0.06), although reporting a new low rate, must now be content with second place They were in first place in 1945 (0.07). The West North Central cities follow close behind (0.07) and nose out the Middle Atlantic cities (0.11). Only the Mountain and Pacific cities record a higher death rate for 1946 (0.31) than for 1945 (0.17). There have been but three deaths in the New England cities during the past three years, one in Providence in 1944, one each in Boston and New Bedford in 1945. While in 1940 one half of the eighteen cities which recorded no deaths from typhoid during a two year period were to be found among the New England cities, in 1946 only about one fourth (fourteen among forty-nine) were from this group The New England cities with a perfect record can do no better, but there is a tendency for other cities to attain the high standards set by this group.

TABLE 4—*Death Rates of Nineteen Cities in East North Central States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Fort Wayne	0.0	0.0	0.0	0.0	2.1	4.2	12.9	7.3		.
Canton	0.0	0.0	0.0	0.4†	0.8	1.4	5.3	8.9		..
Grand Rapids	0.0	0.0	0.0	0.3†	0.2	1.0	1.9	9.1	25.5	29.7
Gary	0.0	0.0	0.0	1.1	0.8			.		..
Evansville	0.0	0.0	0.0	1.2†	1.8	6.2	5.0	17.5	32.0	35.0
Milwaukee	0.0	0.0	0.1	0.1	0.2	0.5	1.6	6.5	13.6	27.0
Akron	0.0	0.0	0.1*	0.4†	0.3	1.3	2.4	10.6	21.0	27.7#
South Bend	0.0	0.0	0.2*	0.0	0.8					..
Cleveland	0.0	0.0	0.2	0.6	1.1	1.0	2.0	4.0	10.0	15.7
Flint	0.0	0.0	0.2	1.4†	0.8	1.6	4.6	22.7	18.8	46.9
Peoria	0.0	0.0	0.6†	1.1†	0.9	0.2	3.7	5.7	16.4	15.7#
Toledo	0.0	0.0	1.1	1.4†	1.2	3.0	5.8	10.6	31.4	37.5
Indianapolis	0.0	0.3*	0.4†	1.2†	1.8	2.7	4.6	10.3	20.5	30.4
Columbus	0.0	0.5*	0.4†	1.4†	1.9	2.1	5.5	7.1	15.8	40.0
Chicago	0.1	0.1	0.1	0.3	0.4	0.6	1.4	2.4	8.2	15.8
Detroit	0.1	0.1*	0.1	0.4	0.7	1.1	4.1	8.1	15.4	22.8
Cincinnati	0.2	0.4†	0.3†	1.1†	1.4	2.5	3.2	3.4	7.8	30.1
Dayton	0.5	0.5	0.3†	1.4	0.8	1.1	5.3	9.3	14.8	22.5
Youngstown	0.6	0.0	0.1*	0.7	1.2	1.1	7.2	19.2	23.5	35.1

* All typhoid deaths were stated to be in nonresidents
† One third or more of the reported typhoid deaths were stated to be in nonresidents
# Incomplete data

Twelve of the large Middle Atlantic cities (population 13,129,185) (there were thirteen in 1945) report no death from typhoid in 1946 (table 2). Albany, Buffalo, Elizabeth, Erie, Jersey City, Paterson, Reading, Syracuse, Trenton and Yonkers have maintained their ranking of 1945 while Camden and Newark have been added to the honor roll. Rochester and Scranton, each with one death in 1946, were eliminated from the honor roll, Scranton after six years with no death. The Middle Atlantic cities have a group rate (0.11) which is but slightly higher than that of the East North Central and West North Central cities. It is much lower than the rate for 1945 (0.23) but not as low as that for 1943 (0.08). In 1946 there were fourteen deaths, thirteen among residents; in 1945 there were thirty, twenty-five among residents; in 1943 there were eleven, nine among residents. Jersey City reports no typhoid death for four years (table 9), Paterson and Reading none for five years, Albany and Trenton none for six years, Erie none for seven years, Yonkers none for eight years Utica records one death among residents in 1946, the second such death in fifteen years. It is stated that although the death occurred in a resident of Utica, the source of infection was reliably established as being in Italy. New York records eight deaths in 1946, all among residents (there were eleven in 1945, thirteen in 1944). The low mark was reached in New York in 1943 with four deaths, three among residents. (In 1942 there were five, all among residents.) New York reports a localized outbreak with 20 cases and no deaths in August 1946; the outbreak was attributed to fresh vegetables contaminated by sewage backed up out of a toilet bowl in an apartment immediately over the vegetable store. It is stated that in Philadelphia there occurred two deaths, both among residents. This marks a new low for this city. Pittsburgh records but one death, which occurred among nonresidents. Pittsburgh reported no death among residents in 1942 and again in 1946

TABLE 5—*Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Chattanooga	0.0	0.0	0.2	0.9	5.8	8.0	18.6	27.2	35.8#	..
Nashville	0.0	0.6*	0.5*	3.4†	5.7	18.2	17.8	20.7	40.2	61.2
Memphis	0.3	0.0	0.3†	4.0†	7.5	9.3	18.9	27.7	42.5	35.3
Louisville	0.6	0.6†	0.5†	0.9	2.8	3.7	4.9	9.7	19.7	52.7
Birmingham	0.7*	1.9†	0.9†	2.5†	4.1	8.0	10.8	15.5	41.5	41.7
Knoxville	1.8†	0.9*	1.2*	3.8	6.0	10.7	20.8	25.5#	..	...

* All typhoid deaths were stated to be in nonresidents
† One third or more of the reported typhoid deaths were stated to be in nonresidents
# Incomplete data

TABLE 6—*Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Duluth	0.0	0.0	0.0	0.2	1.0	1.1	1.7	4.4	19.8	45.5
Des Moines	0.0	0.0	0.0	1.3	2.5	2.4	2.2	6.4	15.9	23.7
Minneapolis	0.0	0.0	0.1	0.2	0.8	0.8	1.9	5.0	10.6	32.1
Kansas City, Mo	0.0	0.0	0.1†	0.9†	1.6	2.8	5.7	10.6	16.2	35.6
Wichita	0.0	0.0	0.2	0.4	1.1	1.2	6.3		.	
Kansas City, Kan	0.0	0.0	0.8†	1.0	1.0	1.7	5.0	9.4	31.1	74.5#
St Paul	0.0	0.3	0.1	0.3	0.7	1.4	3.4	3.1	9.2	12.8
St Louis	0.1*	0.1	0.2†	0.7	1.6	2.1	3.9	6.5	12.1	14.7
Omaha	0.4	0.4	0.1	0.6	0.9	1.3	3.3	5.7	14.9	40.7

* All typhoid deaths were stated to be in nonresidents
† One third or more of the reported typhoid deaths were stated to be in nonresidents
# Incomplete data

The rate (0.44) for the South Atlantic cities (table 3) (population 2,727,985) is twice the low rate for 1944 (0.22) but is significantly lower than the rate for 1945 (0.62) In these cities there occurred twelve deaths in 1946 (nine among residents), seventeen in 1945 (eleven among residents), six in 1944 (three among residents). Five cities (Atlanta, Charlotte, Jacksonville, Miami, Richmond) are on the honor roll, and it is stated that the two deaths in Norfolk occurred among nonresidents. In 1945 Charlotte was the only city on the honor roll. In 1944 there were six such cities (Atlanta, Jacksonville, Miami, Norfolk, Tampa, Wilmington). Charlotte has been included in the group for the fifth time; however, for purposes of adequate comparison the figures for this city have been omitted in calculating rates for the group as a whole. Washington records six deaths in 1946, five among residents (there were two deaths in 1945, four in 1944, one in 1943) Tampa reports two deaths both among residents, Baltimore and Wilmington each one such death.

TABLE 7—*Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Tulsa	0.0	0.0	0.0	0.4	1.1	8.3	16.2#			.
Oklahoma City	0.0	0.0	0.1	2.6	4.1	7.4#				
El Paso	0.0	0.0	2.7	4.5	5.2	9.1	10.8	30.7	42.8	
San Antonio	0.4	0.4	0.3	2.9	4.3	4.6	9.3	21.3	29.5	35.9
New Orleans	0.4†	1.2*‖	1.4†‖	5.0†	9.6	9.9	11.6	17.5	20.9	35.6
Houston	0.5†	0.8†	1.1	2.3	3.2	4.8	7.6	14.2	38.1	49.5#
Fort Worth	0.6	0.6	0.4†	2.1	1.5	5.9	6.1	16.2#	11.9	27.8
Dallas	0.7	0.3	0.9†	2.7†	5.1	7.3	11.2	17.2	.	.

* All typhoid deaths were stated to be in nonresidents

† One third or more of the reported typhoid deaths were stated to be in nonresidents

# Incomplete data

‖ 1945 special census gives rate of 1.1 for 1945 and 1.3 for 1941 1945 for New Orleans.

The East North Central cities (population 9,386,378) have lost first place, which rank they held in 1945 and back in 1941 and 1938. Fourteen (thirteen exclusive of Gary) of the cities in this group (Akron, Canton, Cleveland, Columbus, Evansville, Flint, Fort Wayne, Gary, Grand Rapids, Indianapolis, Milwaukee, Peoria, South Bend, Toledo) report no death from typhoid in 1946 (table 4). Gary was added to this group in 1940, but figures for this city have been omitted in determining rates for the group as a whole. The number of typhoid deaths decreased from seven in 1945 (thirty-three in 1940, thirteen in 1944) to six in 1946, a new low (the rate from 0 35 in 1940, 0.14 in 1944 and 0.07 in 1945 to 0.06 in 1946). Twelve cities (Akron, Canton, Cleveland, Evansville, Flint, Fort Wayne, Gary, Grand Rapids, Milwaukee, Peoria, South Bend, Toledo) record no typhoid death during 1945 and 1946 (table 9), Fort Wayne none for twelve years (the longest honor record of any city), Canton and Grand Rapids none for seven years, Evansville and Gary none for six years. Chicago records two deaths and Cincinnati, Dayton, Detroit and Youngstown each one death, all among residents. Detroit reports that among 24 cases of typhoid attributed to a church supper in a nearby community, 13 were in residents of Detroit among whom there occurred no deaths. A person preparing and serving food was found to be a typhoid carrier

TABLE 8—*Death Rates of Twelve Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population*

	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Salt Lake City	0.0	0.0	0.1*	0.3*	0.7	1.9	6.0	9.3	13.2	41.1
Long Beach	0.0	0.0	0.1	0.5	0.5	1.1	2.1#	..	.	.
Oakland	0.0	0.0	0.2	0.5†	1.2	1.2	2.0	3.8	8.7	21.5
San Diego	0.0	0.0	0.2†‖	0.8	1.3	1.0	1.6	7.9	17.0	10.8
Seattle	0.0	0.3	0.1	0.2	0.7	2.2	2.6	2.9	5.7	25.2
Denver	0.3	0.0	0.3†	1.4	1.7	2.6	5.1	5.8	12.0	37.5
San Francisco	0.3	0.2*¶	0.1†	0.4	0.8	2.0	2.8	4.6	13.6	26.3
Los Angeles	0.3†	0.3	0.3	0.7†	0.8	1.5	3.0	3.6	10.7	19.0
Portland	0.7	0.0	0.1*	0.3	0.8	2.3	3.5	4.5	10.8	23.2
Spokane	0.8*	0.0	0.6†	1.2	1.0	2.2	4.4	4.9	17.1	50.3
Sacramento	0.9	0.9	0.4†	1.5*	6.3	..		..	.	.
Tacoma	1.8†	0.0	0.5†	0.5	0.9	1.8	3.7	2.9	10.4	19.0

* All typhoid deaths were stated to be in nonresidents

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

# Incomplete data

‖ 1944 special census gives rate of 0.1 for 1941 1945 for San Diego

¶ 1945 special census gives rate of 0.1 for 1945 for San Francisco

The six cities (table 5) in the East South Central group (population 1,286,747) show a decrease in the death rate (0.54 in 1946, 0.70 in 1945). However, a lower death rate (0.31) was recorded in 1944 and the same rate in 1942 (0.54). This group has the highest group rate for 1946, a position which it also held in 1945, the South Atlantic cities being next (0.44). The effect of hospitalizing patients from surrounding rural areas continues to be evident Of seven deaths in 1946, four were among nonresidents (seven of nine deaths in 1945). Two cities (Chattanooga and Nashville) report no deaths among either residents or nonresidents and appear on the honor roll The two deaths in Birmingham and the one death in Memphis were stated to be among nonresidents Chattanooga reports no death for five years (table 9). Knoxville records two deaths, one among residents; Louisville two deaths, both among residents.

TABLE 9—*Forty-Nine Cities with No Typhoid Deaths in 1945 and 1946* #

Akron
Albany 6
Bridgeport 5
Buffalo
Canton 7
Cambridge 9
Charlotte
Chattanooga 5
Cleveland
Des Moines 7
Duluth 8
Elizabeth
El Paso
Erie 7
Evansville 6
Fall River 10
Flint
Fort Wayne 12
Gary 6
Grand Rapids 7
Hartford 8
Jersey City 4
Kansas City, Kan 3
Kansas City, Mo
Long Beach 3
Lowell 3
Lynn 10
Milwaukee 3
Minneapolis 5
New Haven 3
Oakland 3
Oklahoma City
Paterson 5
Peoria 3
Providence
Reading 5
Salt Lake City 5
San Diego 4
Somerville 6
South Bend
Springfield 8
Syracuse
Toledo 3
Trenton 6
Tulsa 7
Waterbury 3
Wichita 4
Worcester 5
Yonkers 8

12 No typhoid deaths in twelve years
10 No typhoid deaths in ten years
9 No typhoid deaths in nine years
8 No typhoid deaths in eight years
7 No typhoid deaths in seven years
6 No typhoid deaths in six years
5 No typhoid deaths in five years
4 No typhoid deaths in four years
3 No typhoid deaths in three years
# Forty seven without Charlotte and Gary

The West North Central cities (population 2,716,484) show a decrease in the number of deaths from three to two (table 6); one of the two was among residents. The death rate declined from 0 11 in 1945 (it was the same in 1943 and 1944) to 0.07 in 1946 Seven cities (Des Moines, Duluth, Kansas City, Kan., Kansas City, Mo, Minneapolis, St. Paul, Wichita) record no death, and St. Louis reports one death among nonresidents. After a period of four years (1941 to 1944) without a death, Omaha reported one death in 1945 and another in 1946. There has occurred no typhoid death in Duluth for the past eight years (table 9), none in

Des Moines for seven years, none in Minneapolis for five years, none in Wichita for four years. Kansas City, Mo., records no death among residents for five years.

The eight cities of the West South Central group (table 7) (population 2,048,692) report a continued reduction in the death rate (2.00 in 1940, 0.83 in 1943, 0.59 in 1945, 0.39 in 1946). The actual number of deaths decreased from twelve in 1945 (forty-one in 1940) to eight in 1946, the lowest of record. Of the eight deaths in this group of cities, two were among nonresidents (eight of twelve in 1945). The low point for deaths among residents (four) occurred in 1945. Three cities (El Paso, Oklahoma City, Tulsa) record no death in 1946. Tulsa reports no death for seven years. Dallas reports two deaths among residents. It is stated that of the two deaths each in Houston and New Orleans, one each was among nonresidents. Fort Worth and San Antonio record one death each among residents. Noteworthy is the reduction in the death rate of the cities of this group from 5.36 for the quinquennial period 1931 to 1935 to a new low of 0.39 in 1946.

The eleven cities (excluding Sacramento) in the Mountain and Pacific states (table 8) (population 4,186,039) report an increase from seven in 1945 to thirteen in 1946 (there were but five deaths in 1944). The rate has increased from 0.17 to 0.31. (It was 0.12 in 1944.) This is the only group of cities which records more deaths from typhoid in 1946 than in 1945. Sacramento has again been omitted in calculating the total number of deaths and the rates. This city reports one death among residents. Five of the Mountain

TABLE 10.—*Death Rates from Typhoid in 1946*

Honor Roll: No Typhoid Deaths (Sixty-Two Cities)#

Akron
Albany
Atlanta
Boston
Bridgeport
Buffalo
Canton
Cambridge
Camden
Charlotte
Chattanooga
Cleveland
Columbus
Des Moines
Duluth
Elizabeth
El Paso
Erie
Evansville
Fall River
Flint
Fort Wayne
Gary
Grand Rapids
Hartford
Indianapolis
Jacksonville
Jersey City
Kansas City, Kan.
Kansas City, Mo
Long Beach
Lowell
Lynn
Miami
Milwaukee
Minneapolis
Nashville
Newark
New Bedford
New Haven
Oakland
Oklahoma City
Paterson
Peoria
Providence
Reading
Richmond
Salt Lake City
San Diego
Seattle
Somerville
South Bend
Springfield
St. Paul
Syracuse
Toledo
Trenton
Tulsa
Waterbury
Wichita
Worcester
Yonkers

First Rank: From 0.1 to 1.9 Deaths per Hundred Thousand (Thirty-Four Cities)¶

Baltimore	0.1	Rochester	0.3	Dallas	0.7
Chicago	0.1	San Francisco	0.3	Portland	0.7
Detroit	0.1	New Orleans	0.4†	Scranton	0.7
New York	0.1	Omaha	0.4	Spokane	0.8*
Philadelphia	0.1	San Antonio	0.4	Sacramento	0.9
Pittsburgh	0.1*	Dayton	0.5	Washington	0.9‡
St. Louis	0.1*	Houston	0.5†	Wilmington	0.9
Cincinnati	0.2	Fort Worth	0.6	Utica	1.0
Denver	0.3	Louisville	0.6	Norfolk	1.4*
Los Angeles	0.3†	Youngstown	0.6	Knoxville	1.8†
Memphis	0.3	Birmingham	0.7*	Tacoma	1.8†
				Tampa	1.8

* All typhoid deaths are stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

# Sixty without Charlotte and Gary.

¶ Thirty-three without Sacramento.

‡ 1946 special census gives rate of 0.7 for 1946 for Washington.

TABLE 11.—*Number of Cities with Various Typhoid Death Rates*

	No. of Cities	10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1906-1910	77	75	2	0	0	0	0
1911-1915	79	68	10	2	0	0	0
1916-1920	84	22	32	30	0	0	0
1921-1925	89	12	17	48	12	0	0
1926-1930	92	3	10	30	37	12	0
1931-1935	93	0	6	17	28	42	0
1930	93	2	6	30	23	22	10
1931	93	2	6	23	28	22	12
1932	93	1	7	13	29	29	14
1933	93	0	7	18	19	33	16
1934	93	0	9	11	27	23	23
1935	93	0	7	15	18	29	24
1936	93	0	3	15	21	36	18
1937	93	0	1	13	26	26	27
1938	93	0	3	13	14	34	29
1939	93	0	3	7	17	32	34
1940*	93	0	0	12	12	30	39
1941*	93	0	0	4	7	46	36
1942*	93	0	1	3	5	34	50
1945*	93	0	0	1	5	31	56
1946*	93	0	0	0	5	28	60

* Charlotte, Gary and Sacramento omitted.

TABLE 12.—*Total Typhoid Rate for Seventy-Eight Cities, 1910-1946**

	Population	Typhoid Deaths	Typhoid Death Rate per 100,000
1910	22,573,435	4,637	20.54
1911	23,211,341	3,950	17.02
1912	23,835,399	3,132	13.14
1913	24,457,989	3,285	13.43
1914	25,091,112	2,781	11.08
1915	25,713,346	2,434	9.47
1916	26,257,550	2,191	8.34
1917	26,865,408	2,016	7.50
1918	27,086,696†	1,824†	6.73
1919	27,735,083†	1,151†	4.15
1920	28,244,878	1,088	3.85
1921	28,859,062	1,141	3.95
1922	29,473,246	963	3.26
1923	30,087,430	950	3.16
1924	30,701,614	943	3.07
1925	31,315,598	1,079	3.44
1926	31,929,782	907	2.84
1927	32,543,966	648	1.99
1928	33,158,150	628	1.89
1929	33,772,334	537	1.59
1930	34,410,235	554	1.61
1931	34,508,750	563	1.63
1932	34,607,505	442	1.28
1933	34,708,945	423	1.22
1934	34,833,650	413	1.19
1935	35,005,351	348	0.99
1936	35,196,325	337	0.96
1937	35,386,380	289	0.82
1938	35,578,011	257	0.72
1939	35,767,022	232	0.65
1940	35,895,638	172	0.48
1941	35,895,638††	123	0.34
1942	35,895,638††	83	0.23
1943	35,895,638††	78	0.22
1944	35,895,638††	66	0.18
1945	35,895,638††	80	0.22
1946	35,895,638††	54	0.15
Rates for Ninety-Three Cities			
1935	37,025,179	385	1.04
1936	37,241,414	366	0.98
1937	37,459,339	324	0.86
1938	37,680,155	298	0.79
1939	37,900,354	259	0.68
1940	38,060,662	190	0.50
1941	38,060,662††	141	0.37
1942	38,060,662††	95	0.25
1943	38,060,662††	85	0.22
1944	38,060,662††	73	0.19
1945	38,060,662††	87	0.23
1946	38,060,662††	62	0.16

* The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita, Wilmington.

† Data for Fort Worth lacking.

†† 1940 census figures used.

and Pacific cities (Long Beach, Oakland, Salt Lake City, San Diego, Seattle) report no death from typhoid in 1946. There were nine cities on the honor roll in 1944, eight in 1945. Long Beach, Oakland, Salt Lake City and San Diego have maintained their ranking of 1945. Salt Lake City reports no death during the past five years, San Diego none for four years. It is stated that the one death in Spokane was among nonresidents. Of five deaths in Los Angeles, four were among residents. San Francisco and Tacoma each report two deaths, one among nonresidents. Denver records one death among residents.

THE HONOR ROLL

The number of cities with no death from typhoid has increased from fifty-six to sixty (table 11). Charlotte and Gary, not included in the group of ninety-three cities, also report no death. This is by far the best showing, and there remains no city with a rate of 2.0 or more. The number of cities with rates of less than 1.0 has increased by one (eighty-eight in 1946). Forty-seven cities (forty-nine with Charlotte and Gary) record no typhoid death in 1945 and 1946 (table 10). It is again emphasized that five cities (Birmingham, Norfolk, Pittsburgh, St. Louis, Spokane) in the first rank would appear in the honor roll were they not charged with deaths among nonresidents.

TABLE 13.—*Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

		Typhoid Deaths		Typhoid Death Rates				
	Population*	1946	1945	1946	1945	1941-1945	1936-1940	1931-1935
New England	2,579,152	0	2	0.00	0.08	0.11	0.39	0.70
Middle Atlantic	13,129,185	14	30	0.11	0.23	0.17	0.44	0.80
South Atlantic	2,727,985	12	17	0.44	0.62	0.51	1.14	2.70
East North Central	9,386,378	6	7	0.06	0.07	0.16	0.53	0.73
East South Central	1,286,747	7	9	0.54	0.70	0.57	2.54	4.81
West North Central	2,716,484	2	3	0.07	0.11	0.16	0.60	1.24
West South Central	2,018,692	8	12	0.39	0.59	0.89	3.09	5.56
Mountain and Pacific	4,186,039	13	7	0.31	0.17	0.23	0.60	0.88

* 1940 census figures used

For the seventy-eight cities (table 12) for which data are available since 1910 there occurred fifty-four deaths from typhoid in 1946 (eighty in 1945, sixty-six in 1944 and seventy-eight in 1943). This provides a new low with a rate of 0.15 (the previous low was 0.18 in 1944). For the ninety-three cities the number of deaths in 1946 is sixty-two (eighty-seven in 1945 and seventy-three in 1944).

Table 13 shows the number of deaths for each of the past two years in each group of cities. It also shows the rates for 1945 and 1946 and the quinquennium 1941 to 1945 and the two preceding five year periods. It is hoped that the New England cities will continue to hold their unique record with no deaths and that other cities will soon find themselves in the same class. The continued reduction in rates for all groups is most impressive. For 1946 the health officers report only a few localized outbreaks of typhoid. Improvement has been general throughout the country, and typhoid as a cause of death in these cities is fast approaching the vanishing point. The war years do not appear to have contributed materially to the typhoid problem in the large cities.

Clinical Notes, Suggestions and New Instruments

THROMBOPHLEBITIS OF THE CAVERNOUS SINUS

Report of Complete Recovery in Case with Multiple Pulmonary Abscesses Complicating Pregnancy

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From a review of the literature it is evident that thrombophlebitis of the cavernous sinus is not a rarity. It has been reported in the literature since 1818,[1] and until recently it has been *98 per cent fatal. There have been reported instances of* recovery since 1869. Some of these recoveries have occurred spontaneously while others have been the result of surgical intervention, which has been a therapeutic procedure since 1902 *In all patients who were cured the convalescence was greatly prolonged.* Eagleton[2] reported a series of 25 cases in which there were 4 recoveries, in 3 of which the patient had surgical therapy. From the late nineteenth century until the onset of chemotherapy 58 recoveries have been reported.[3] The exact percentage of recoveries since the onset of chemotherapy is not available, but certainly reports of recovery are much more frequent in the literature.[4]

As far as the complications of thrombophlebitis of the cavernous sinus are concerned, there have been reports of meningitis, abscess of the brain, necrosis of the pituitary body and also of multiple cerebral infarcts.[5] Although it is likely that cases complicated by multiple pulmonary abscesses as a result of septic emboli have occurred, such reports are not available in American medical literature.

The etiology of thrombophlebitis of the cavernous sinus has been a subject of considerable discussion. There are usually *four ways of infection:*

1. Anterior foci of infection: These include the upper lip, alae nasi, vestibule of the nose and eyelids. The route of infection is by way of the angular, supraorbital and supratrochlear veins which drain into the cavernous sinus by way of the *ophthalmic vein.*

2. Internal foci of infection: The sources for this type of infection are the sinuses, turbinates and septum. This infection drains into the cavernous sinus by way of the sphenoid, ethmoid and ophthalmic veins.

3. Inferior foci of infection: The sources of this type are peritonsillar abscesses, operations on the tonsils, operations on the maxilla and deep cervical abscesses. These are carried by way of the pterygoid plexus or by direct proximal extension into the internal jugular through the lateral sinus and petrosal sinus.

4. Posterior foci of infection: These originate in the middle ear and mastoids. They extend from the lateral sinus through

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Written under the direction of the Research Committee of the University of Pittsburgh School of Medicine.

1. Abercrombie, J.: Observations on Chronic Inflammation of the Brain and Its Membranes, Edinburgh M. & S. J. **14:** 265 328 (July 1) 1818.

2. Eagleton, W P.: Cavernous Sinus Thrombophlebitis and Allied Septic and Traumatic Lesions of the Basal Venous Sinuses, New York, The Macmillan Company, 1926, The Carotid Plexus as the Path of Infection in Thrombosis of the Cavernous Sinus, Arch. Surg. **15:** 275-287 (Aug.) 1927.

3 MacNeal, W. J., Frisbee, F. C., and Blevins, A.: Thrombophlebitis of the Cavernous Sinus. A Review of Reported Recoveries with Special Reference to Thrombophlebitis of Staphylococcic Origin, Arch. Ophth **29:** 231-257 (Feb) 1943.

4 Conte, A. J.: A Case of Cavernous Sinus Thrombophlebitis with a Treated with Penicillin Resulting in Complete **55:** 128-132 (March) 1945. MacNeal, W. J., treptococcic Bacteremia and Afferent Thrombosis with Recovery, J. A. M. A. **109:** 2139 (Dec 25) Ridall, E G.: Thrombosis of Cavernous Sinus Treated with Penicillin and Heparin, Arch. Otolarng. **41:** 295 297 (April) 1945. Wolfe, W. C., and Gain, J. F.: Thrombosis of Cavernous Sinuses, ibid **41:** 79 84 (Jan) 1945 Nicholson, W. M , and Anderson, W. B . Penicillin in the Treatment of Cavernous Sinus Thrombophlebitis, J. A. M. A **126:** 12 15 (Sept 2) 1944. Sears, T. P., and Wilson, F. L : Recovery from bosis and Staphylococcic Pneumonia by Combined diazine and Antistaphylococcus Serum: A Case M. J. **42:** 838 (Nov.) 1945

5. Weisman, A D.: Cavernous Sinus Thrombophlebitis: Report of Case with Multiple Cerebral Infarcts and Necrosis of Pituitary Body, New England J. Med **231:** 119 122 (July 27) 1944.

the petrosal sinus. The most commonly observed cause for thrombophlebitis of the cavernous sinus is sinusitis, usually an acute exacerbation of a chronic sinusitis.[6]

There may be two forms of this disease. The acute form occurs as the result of a sudden occlusion. The second occurs as the result of a gradual occlusion, which allows for the development of collateral circulation. This type is usually not accompanied by the occlusive phenomena which accompany the former type. Both these forms are usually infectious in origin. The predominating organisms are either staphylococci or streptococci. It is possible to have a noninfective type of thrombosis of the cavernous sinus. This type occurs as the result of stasis of circulation due to some pathologic lesion which causes pressure on the cavernous sinus or trauma, such as a fracture of the basal portion of the skull.

From the point of view of pathology the lesion in thrombosis of the cavernous sinus is rather simple. As a result of inflammatory reaction the intima of the vein swells and slows the flow of blood, resulting in thrombus formation. The role of the pulsating internal carotid artery passing through the cavernous sinus must also be considered. This pulsation may aid in spreading the inflammation or infection and also may interfere with the flow of the blood, in that it may produce a to and fro movement.

The signs and symptoms occur usually as a result of occlusion or partial occlusion of the cavernous sinus and as a result of sepsis. There are usually pain in the orbit, headache, conjunctival edema, chemosis, ocular proptosis, dilatation of the retinal veins and partial to complete ophthalmoplegia. As a result of sepsis there are chills, fever, sweating, nausea and vomiting. One striking symptom which differentiates this condition from meningitis and other infections of brain or meninges is that the mentality is unimpaired until late in the disease.

The treatment consists in control of the infection and sepsis by means of chemotherapy and in an attempt to prevent thrombosis or at least to prevent the extension of a thrombosis. This is accomplished mainly by the use of anticoagulants. From recent literature it is apparent that combined treatment using the two foregoing principles is the most acceptable. However, cures have been reported in cases in which no anticoagulants have been employed. The case which I am reporting combined the use of anticoagulants, sulfonamide drugs and penicillin.

REPORT OF A CASE

Mrs. S. D., a 27 year old primipara three and one-half months pregnant, was admitted to the Elizabeth Steel Magee Hospital on Oct. 11, 1945 with chief complaints of severe headache, occipital pain, fever, moderate chills, nausea and vomiting. She was well until about two weeks before admission to the hospital, when there developed an infection of the upper part of the respiratory tract, for which she received symptomatic treatment at home. After the fifth day of the illness the headache became more severe and she began to have visual disturbances, nausea and vomiting. These symptoms continued for three days; then there developed a rather high fever with chills and increased sweating. At the same time the right eyelid began to swell and in several days the eye began to protrude and the lid became so swollen that the patient was unable to open the eye.

Physical examination at the time of admission revealed swelling and pronounced tenderness over the right frontal area, edema of the right conjunctiva with proptosis of the right eye. The examination of the fundi revealed blurring of the disk and dilatation of the retinal veins in the right eye. There were no significant observations in the left eye. There was a partial ophthalmoplegia of the right eye. There was definite evidence of sinus involvement, with purulent exudate coming from both nares. There was some swelling of the right occipital area but definite tenderness was absent. Examination of the ears revealed essentially normal conditions. The lungs were clear. The heart revealed no abnormalities. The heart rate was 110 to 120. The blood pressure was 130 systolic and 72 diastolic. Abdominal examination revealed a three months pregnant uterus. The reflexes were physiologic. The extremities showed no abnormalities. On admission the temperature was 100 F., but it soon rose to 104 F.

Heparin and penicillin were administered intravenously, and sulfadiazine was given by mouth. Attempts were made to keep the coagulation time between 12 and 15 minutes. Except for evidence of some involvement of the left eye, there was definite improvement during the first twenty-four hours of treatment. The temperature subsided to 101 F.; the leukocyte count dropped from 25,000 to 12,000 and the polymorphonuclear count from 92 to 78 per cent. Heparin therapy was continued for seven days. The administration of penicillin and sulfonamide drugs was continued for fourteen days, the patient receiving a total of 7,325,000 units of penicillin plus 1,080 grains (65.3 Gm.) of sulfadiazine. Four transfusions of 250 cc. of whole blood were given because of the rapid development of secondary anemia, which was probably due to toxicity and hemolytic staphylococci and streptococci.

After five days of intravenous penicillin therapy the patient had a generalized edema, became irrational and had an increased pulse rate and increased respiratory rate. Associated with this there was a moderate pulmonary edema and a gallop rhythm. The patient became comatose within the next twenty-four hours, after which she had a generalized convulsion. She was given two injections of 50 per cent magnesium sulfate, and all intravenous therapy was discontinued. She was given digitoxin because of the possibility of left ventricular failure. Within twenty-four hours she had a rather well defined diuresis; she became rational, and the pulmonary edema gradually subsided. There was a slow, continued improvement in the patient's general condition, and she was discharged on Nov. 5, 1945.

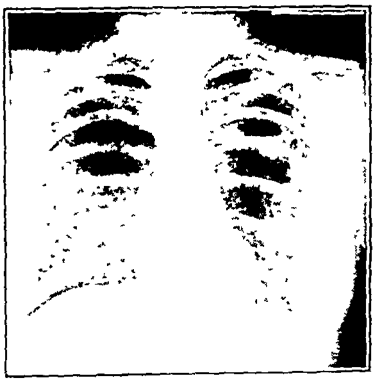

Fig. 1.—Multiple abscesses of the lungs

While the patient was hospitalized, roentgen examination of the nasal accessory sinuses showed a suppurative sinusitis of the left maxillary, frontal and ethmoid sinuses. There was no evidence of osteomyelitis. Blood chemistry studies were within normal limits. The Kahn test was negative. Urinalyses were normal except for slight albuminuria at the time of the high fever. Blood counts showed a rapidly progressive, secondary anemia and moderate leukocytosis with a shift to the left. One blood culture before chemotherapy was negative. The culture from the sinuses showed Staphylococcus aureus and hemolytic streptococci.

About one week after discharge from the hospital, following a treatment for her sinuses, the patient had frontal headaches, moderate fever and nausea and vomiting. She was readmitted on Nov. 16, 1945, at which time she was treated for an acute exacerbation of left frontal and maxillary sinusitis. She received 700,000 units of penicillin. At the time of discharge, Nov. 26, 1945, a second roentgen examination of her sinuses revealed no suppuration. There was evidence of only hyperplastic sinusitis of the left frontal and maxillary sinuses. During this period of hospitalization, there were no residual signs of the thrombosis of the cavernous sinus except for slight blurring of both nerve heads, more decided in the right eye.

The patient was free of symptoms except for a postnasal drip, which persisted for the next four weeks. She then complained of a chronic cough, which was paroxysmal and productive of a purulent sputum. These symptoms continued until Feb. 4, 1946 when the patient came to the office for an examination. Physical observations then revealed a patient, chronically ill in appearance, with a low grade fever, tachycardia, a slight purulent nasal discharge, increased tactile fremitus and crepitant rales over the lower lobe of the right lung. At this examination there were no residual signs of the thrombosis of the cavernous sinus.

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[6] Jackson, C., and Jackson, C. L.: Diseases of Nose, Throat, and Ear, Philadelphia, W. B. Saunders Company, 1945, pp. 68-70.

A roentgenogram of the chest (fig. 1) showed pneumonitis with a small cavity in the lower lobe of the right lung and two cavities in the upper and lower lobes of the left lung. The cavity in the upper lobe of the left lung had a definite fluid level.

The patient was again admitted to the hospital on Feb. 25, 1946 and was given intensive penicillin therapy, for a total of 11,300,000 units. During this hospital admission she was delivered of a normal male infant that weighed 6 pounds 7 ounces (2,920 Gm.). Labor was induced by artificial rupture of the membranes, and the time of labor was twenty-one hours. The delivery was accomplished by pudendal block and a low midforceps application. Penicillin was continued post partum, and the patient had an uneventful postpartum course. At the time of discharge from the hospital, March 30, 1946, there were no abnormal physical signs on examination of the lungs, and a roentgenogram (fig. 2) showed a complete disappearance of all the cavities. There were only residual fibrous tissue changes in the right lower and left upper lobes.

COMMENT

This case is unusual and interesting in that it presents two disease states which were almost 100 per cent fatal previous to the onset of chemotherapy. Of course, the question of accuracy in diagnosis of thrombophlebitis of the cavernous sinus in such a case is always apt to be questioned. The physical observations in this patient were sufficiently definite to make the diagnosis fairly certain, but it was made even more definite by the development of embolic pulmonary abscesses. The distribution of these abscesses would certainly indicate that they were blood-borne and did not result from the drainage of infectious material from the sinuses. The absence of a positive blood culture does not rule this out. Only one blood culture was obtained, and this may have been obtained when there was no septicemia. Further blood cultures were not studied because of the extensive chemotherapy which this patient was receiving.

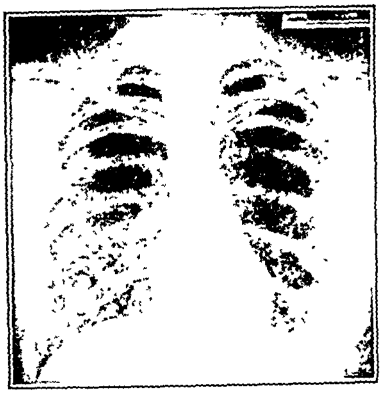

Fig. 2.—Complete disappearance of pulmonary abscesses

One outstanding feature of this case was the development of massive edema after five days of intravenous penicillin and heparin therapy. By calculating the sodium intake and observing blood studies, the role of possible excessive intake of sodium in producing this massive edema was ruled out. Other factors, therefore, were responsible for this edema. The effect of sepsis and toxicity on capillary permeability and nephritic function was a possible explanation; however, at the time of the edema the toxicity and sepsis had greatly abated. One must keep in mind the likelihood of an increased amount of posterior pituitary antidiuretic factor. This could have been associated with pregnancy, or it might have been influenced by the cavernous sinus disease. Because of the latter, the secretions of the pituitary may have been increased by irritation of the secretory cells as a result of either an inflammatory reaction or an impairment of circulation. More involved blood chemistry and water balance studies might have clarified the cause of the massive edema. In my opinion all these factors played a role and that of the antidiuretic factor should be emphasized.

The amount of penicillin used in this case was certainly extremely large. It was considered at the time that the patient was treated for the pulmonary abscesses that it would be advisable to use exceedingly large doses of penicillin because she had received moderately large doses to treat the thrombosis of the cavernous sinus. It was assumed that the same organism which caused the thrombosis was responsible for the abscesses and that possibly this organism might have developed some resistance to penicillin. This reasoning was prompted by the fact that septic emboli and pulmonary abscesses developed even though the patient was getting moderately large doses of penicillin during the time of the acute thrombophlebitis and for a long period after all signs of the thrombophlebitis had subsided. Therefore, the use of large doses of penicillin was justified.

SUMMARY

1. Recovery in a case of thrombophlebitis of the cavernous sinus with multiple pulmonary abscesses complicating pregnancy is reported.

2. A brief discussion of the case history and of pertinent clinical and therapeutic items in regard to thrombophlebitis of the cavernous sinus is included.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council authorized the publication of a report [Report of the Council: Possible Dangers of Tetrathionate Therapy of Thromboangiitis Obliterans, J. A. M. A. **133:**693 *(March 8) 1947] advising against the clinical use of sodium tetrathionate because of the potential dangers of nephrotoxic actions as revealed in animals. Dr. Frank V. Theis takes exception to this caution, believing that there is no danger with clinical doses. Dr. Geza de Takats also has protested against the report. The Council believes that these letters should be published. They are reproduced here.* Austin Smith, M.D., *Secretary.*

Supplemental Report on Sodium Tetrathionate

April 4, 1947

Dr. Austin Smith, Secretary
Council on Pharmacy and Chemistry
535 N. Dearborn Street
Chicago 10, Illinois

Dear Doctor Smith:

I am concerned by the action of your committee in officially advising, in the March 8 issue of The Journal, that the "use of Tetrathionate in medicine should be abandoned" because of its nephrotoxic effect. To abandon the use of Tetrathionate, on the "substantial evidence" you present, would deprive many patients suffering with thromboangiitis obliterans, thrombophlebitis and other related diseases of intravascular clotting from what are believed to be the benefits of its use. Your conclusion is based on the results of a limited study with relatively large doses of the drug given experimental animals. It overlooks completely the clinical investigations and successful use of Tetrathionate as a therapeutic agent. I know of no report of toxic effect from the clinical use of Tetrathionate.

In 1936 Freeland and I were responsible for having Tetrathionate (Searle) prepared and made commercially available. I have used or supervised the use of more than 15,000 ampules of Tetrathionate supplied to me by G. D. Searle and Company and have been satisfied with the results in treating more than 500 patients. Confirming our observations, de Takats (*Surgery* **14:**661 [Nov.] 1943) stated that the "inexpensive and nontoxic sodium tetrathionate is now in routine use on our (his) surgical service" and that "clinically there can be no doubt about the beneficial influence of intravenous sulfur compounds especially in migrating phlebitis"; and "in the acute stages of Buerger's disease the intravenous use of sulfur has given surprising results." Allen, Barker and Hines in their recent book state that to their knowledge "no untoward reactions have followed the administration of sodium tetrathionate." It may be that the Council, carrying the weight and responsibility that it does to the medical profession, will wish to review its opinion in the light of further evidence on the clinical investigations with sodium tetrathionate as well as interpret the results of animal studies with the therapeutic doses used in clinical medicine. These doses have not been toxic.

The nephrotoxic effects of Tetrathionate which are cited followed the administration of relatively huge doses to experimental animals. For the dog, Chen, Rose and Clows reported the lethal dose as being 1.0 mg. per kilogram body weight or 140 times the therapeutic clinical dose, while Gilman determined the dose to be 250 mg. per kilogram or 36 times the clinical dose. Gilman's statement that "Tetrathionate is toxic to the renal tubule to a degree that moderate doses produce complete anuria within less than an hour" may be questioned from the data he presented. The "moderate doses" he used were excessively large (i. e. 11.0 Gm. in a single injection to a dog produced anuria in seventy-five minutes) and were toxic doses compared to our recommended clinical dose of 0.4 or 0.6 Gm. for an adult weighing over 70 kilograms. His report showed that with 7 times the human dose given rabbits and 16 times the human dose given dogs, none of the animals died and there were no demonstrable toxic or ill effects. There are few systemic therapeutic drugs of value which have a greater factor of safety than Tetrathionate.

Prior to our clinical use and investigations of Tetrathionate, we too studied the toxic effects on rabbits. Series of rabbits were given daily intravenous doses of 0.1, 0.2, 0.4 and 0.6 Gm. of Tetrathionate, which were equivalent to 9, 18, 36 and 72 times respectively the clinical dose per kilogram recommended for therapeutic use. Daily injections of 0.4 Gm. (35 times the clinical dose) for three days (total of 1.2 Gm.) resulted in death of the animals from twelve hours to three days after the third dose. Autopsy study revealed edema and necrosis of the liver, kidney, heart and other organs. Rabbits given the 0.1 Gm. dose (9 times the clinical dose) daily for twelve days (total of 1.2 Gm.) showed no ill effects, thrived and gained weight. Autopsy study revealed no evidence of nephrotoxic or any other toxic effect. Studies on these animals included blood and platelet counts, hemoglobin, blood clotting time and glutathione, fibrinogen and prothrombin contents. Even with the fairly large doses used in the latter series of rabbits we found no deleterious effect.

The clinical dose which we recommended after extensive clinical and animal investigations with various size doses is 0.4 or 0.6 Gm. of sodium tetrathionate. This is equivalent to an average of 7 mg. per kilogram, a really small fraction of the toxic doses used in the investigations by Gilman. Even our most intensively treated patients show no evidence of nephrotoxic or other toxic effects; some of these have been followed for ten years and have received more than 300 injections. Occasionally, transient reactions with faintness, nausea, abdominal discomfort or weakness have followed an initial or too rapid injection. However, the same reactions occur with the use of sodium thiosulfate. Prompt relief is obtained by the ingestion of milk, food or water. Smaller subsequent doses or slower injection will almost always prevent recurrences of these reactions.

Our clinical investigation during the past ten years has included laboratory studies on the urine, blood cell counts, clotting time, sedimentation rate, basal metabolism rate and determination of the blood cholesterol, lipids, fatty acids, phospholipids, nonprotein nitrogen, urea, protein, creatinine, glutathione, sugar, calcium, potassium, sodium, prothrombin and oxygen and carbon dioxide capacity and content (saturation) of the arterial and venous blood. The results of some of these studies have been published and are available in the surgical literature (*Arch. Surg.* **38**:191 [Feb.] 1939; **40**:190 [Feb.] 1940; *Surgery* **11**:101 [Jan.] 1942; *Ann. Surg.* **113**:1107 [June] 1941). When changes followed injections of Tetrathionate they were usually favorable for the continued use of the drug; no deleterious effects have been observed.

My own analysis of Gilman's reported observations is that (1) Tetrathionate, when used in doses comparable to those used clinically, is not toxic to experimental animals and (2) the conversion and elimination of the Tetrathionate from the body are much slower than for the thiosulfate solution. However, the delay in eliminating the drug in the body is not sufficiently prolonged to produce deleterious or toxic cumulative effect from daily injections and is the reason for our original decision, ten years ago, for substituting the tetrathionate for the thiosulfate solution. We arrived at the same conclusion from the results of studies on the elimination of the sulfur in the urine. This part of the investigation was done with the cooperation of Dr. Andrew McNally, toxicologist, who originally suggested the use of Tetrathionate.

In view of the benefit which so many patients with thromboangiitis obliterans, thrombophlebitis and other diseases with tendency for intravascular clotting have received from the therapeutic use of Tetrathionate (Searle) and in the absence of any clinical or laboratory evidence of toxicity in the doses we advise, it would appear that the Council should review all the information available and reconsider its recommendation that the "use of Tetrathionate in medicine should be abandoned."

Yours truly,

Frank V. Theis.

Dr. Geza de Takats of Chicago also has written as follows under date of April 7, 1947:

I have delayed giving you my reaction to the statement made by your committee regarding tetrathione because I wanted to study the article of Gilman and also look over our records regarding any untoward results with the drug.

Obviously, sodium tetrathionate as used in Gilman's experiments was being used in a dose about thirty-five times the dose used in patients. I might say that our group has never made any renal function tests before and after use of sodium tetrathionate in man. However, with the exception of dizziness, flushing of the face or short attacks of nausea which may follow any intravenous injection, no harmful effects have been obtained.

My assistants and I use tetrathione rather sparingly and certainly have made no such extensive use of it as has Dr. Frank Theis and his group. However, if your committee based its opinion on the data available from Gilman's experiments, very few potent drugs can be used at present.

If you gave a dog or rabbit thirty-five times the dose of prostigmine, mecholyl, heparin, dicumarol and many others, there would be widespread toxic damage and mortality among the animals.

Certainly the quoted experiments do not reproduce clinical conditions and I am writing to suggest that the committee review its statement and if necessary conduct some more experiments based on controlled clinical material.

No nephrotoxic effects were observed in the patients treated by Dr. Theis and his associates and apparently these investigators feel that there is little if any danger of such effects from the doses that they have used clinically. However, when an agent is capable of interfering with the important but insufficiently known SH functions, a word of caution is not amiss. It should be realized at least that the dosage must be kept at a minimum and the renal function kept under close observation. Further observations may reveal additional valuable information.

Council on Foods and Nutrition

ACCEPTED FOODS

The following food, dehydrated tree-ripened flaked banana, used primarily in the feeding of infants and small children, has been accepted as conforming to the Rules of the Council on Foods and Nutrition of the American Medical Association.

James R. Wilson, M.D., *Secretary.*

PREPARATIONS USED IN THE FEEDING OF INFANTS.

Kannenglesser & Company, New York

Kanana Banana Flakes.

Analysis (submitted by manufacturer).—Moisture 5.52%, ash 2.83%, fat (ether extract) 1.30%, protein (N × 6.25) 6.87%, carbohydrates, reducing 32.50%, sucrose 41.00%, starch 4.96%, total carbohydrates other than crude fiber (by difference) 83.48%.

Calories.—3.83 per gram; 109 per ounce.

Vitamins and Minerals.—	Per Hundred Grams
Vitamin A	154 U. S. P. units
Thiamine	0.199 mg.
Ascorbic acid	36.00 mg.
Riboflavin	0.318 mg.
Phosphorus	110.00 mg.
Magnesium	135.00 mg.
Sodium	406.00 mg.
Iron	2.70 mg.

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SATURDAY, JULY 26, 1947

RHEUMATIC FEVER CONTROL PROGRAM

The most comprehensive plan now in existence for control of rheumatic fever is probably that of the London County Council Rheumatic Scheme. School children in London are examined by school medical officers whose function is generally diagnostic. These doctors become especially interested and proficient in the recognition of rheumatic manifestations among the children routinely examined. General practitioners are invited to cooperate with the central office or one of its supervisory centers by referring to them children with diagnosed or suspected rheumatic fever who, in their opinion, should be admitted to a hospital. The London County Council has at its disposal 1,000 beds. When the central bureau passes on the case and the patient is approved by the medical referee the child is then transmitted by ambulance 20 miles to Carshalton or one of the other similar institutions in the country. These institutions, according to Parkinson,[1] are more than convalescent homes; they are probably best described as Hospital Schools. They have country surroundings with large open terraces alongside the wards onto which the beds can be easily run. It is the custom to carry out what is, in fact, open air treatment except in the most severe cases. Experienced medical officers believe that if the children are warmly clad there is no additional risk of infection or chill, that appetite is improved and sleep is sound. In severe carditis stress is placed on complete immobilization and ample nursing facilities. The children receive regular school instruction beginning with their convalescence from teachers appointed by the Ministry of Education. Parkinson stresses that education of rheumatic children is of great ultimate importance apart from the fact that the lessons help pass the time agreeably. The usual length of stay in one of these hospital schools is from six to twelve months.

The city of London has twenty supervisory centers distributed throughout, including the most thickly populated areas; ten of these are in connection with the outpatient departments of large hospitals. These centers carry out periodic supervision especially of patients discharged from the hospital centers, diagnose cases referred and instruct parents in child welfare. After school age young people with permanent valvular conditions are transferred to ordinary hospital outpatient clinics. Suitable employment is arranged for them by voluntary health societies such as the After-Care Association. The London City Council maintains a register of medical records and a card index of all the rheumatic children, past and present, who have been accepted at any center or hospital school. In 1938 the Council registered 22,800 children up to the age of 15 in London who were suffering or had suffered from rheumatic infection. This number represented an incidence of about 2.6 per cent of the child population.

With the passing of the New Health Act the whole of the health services and all the hospitals in the country will come under the control of the Ministry of Health in 1948; fourteen regions have been demarcated. They will be administered by regional councils, each working as far as possible from a main university center. The Royal College of Physicians appointed a rheumatic fever committee on which are represented the College, the Ministry of Health, the University of London, the Medical Research Council and the London County Council, with cardiologists and pediatricians concerned in the problem. This body is at present consultative, but it is believed that in the immediate future it will take the initiative in planning for a resumption of schemes like the London County Council scheme not only in London but in each of the regions into which the whole country has now been divided. The most urgent and the most difficult problem in connection with the control of rheumatic fever is the provision of sufficient beds for long term treatment of the rheumatic children.

In the United States public measures for the control of rheumatic fever are largely a matter of state and private concern rather than that of the governmental agencies. A good example of a state program is furnished by California. The program began with the formation in 1926 of the California Heart Association, the function of which is to arrange postgraduate education in heart disease for the physicians of the state. According to Rosenblum[2] the interest of physicians and of the general public was stimulated by the rheumatic fever program in Solano and Contra Costa counties. The program was supported by the state department of public health with funds made available by the Children's Bureau. Over 300 cases of rheumatic fever and rheumatic heart disease were detected and provision was made for hospital and convalescent care for many of them. Yearly symposiums open to all physicians in California and neighboring states were held in San Francisco, Los Angeles and San Diego under the sponsorship of community heart associations. These functions have been correlated by the California Heart Association and assisted by the medical schools and leading hospitals of the respective areas with teaching ward rounds, clinical demonstrations and lectures. In 1943 the California Tuberculosis and Health Association joined forces with the California Heart Association in forming a Heart Division of the California Tuberculosis and Health Association. This Heart Division provides an opportunity for health education and community organization in the field of rheumatic fever and rheumatic heart disease. Case registers for rheumatic children are being developed in San Francisco and Los Angeles counties. Although rheumatic fever and rheumatic heart disease are legally reportable in California, an adequate definition of the magnitude of the problem according to Rosenblum must await complete and effective reporting on a statewide basis. Here as well as in England the greatest shortcoming in the carrying out of the program is the lack of hospital and convalescent facilities. This shortcoming can be rectified by legislative action which will provide funds to assist local communities in developing programs and facilities.

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[1] Parkinson, John: Public Measures for the Control of Rheumatic Fever in England, California Med. **66:** 230 (April) 1947.

[2] Rosenblum, Harold: Rheumatic Fever Control Program in California, California Med **66:** 233 (April) 1947.

THE PROBLEM OF AMEBIASIS

Albright and Gordon[1] point out that a considerable reservoir of unsuspected and unreported amebiasis has been brought back to the United States by the returning armed forces. The overall incidence of this type of infection in the United States is probably about 10 per cent. The so-called healthy carrier is a most important epidemiologic problem. Contrary to the widespread belief that Endameba histolytica may live and multiply within the lumen of the bowel without producing lesions or that an avirulent strain exists, they feel with Hargreaves[2] that the term "cyst carrier" is to be deprecated because every person who passes cysts must have vegetative amebas living on the tissues of his bowel wall and completing their normal development. Infection with the parasite always means invasion of the tissues with the production of pathologic lesions; cysts from asymptomatic carriers are fully pathogenic. Faust[3] demonstrated in dogs that there is no detectable difference in susceptibility to human strains of an acute, chronic or carrier type. The evidence concerning the inability of the parasite to live in the lumen without producing lesions is quite conclusive. Faust[4] in a series of 202 postmortem examinations conducted on accident cases in New Orleans found thirteen infections of E. histolytica demonstrated by the recovery of the organism in the bowel. The intestinal lesions consisted of pin point ulcerations, shallow crater-like lesions and rather extensive, superficial erosive processes of the mucosa. Amebas were demonstrated in each of these types of tissue involvement. These lesions represent the mildest type of damage to tissues reported in carriers and lend support to the belief that E. histolytica lives at the expense of the asymptomatic host. Albright and Gordon noted that amebic hepatitis develops in roughly one third of the patients who have never experienced diarrhea or dysentery. This strongly suggests that the "carrier" state is a pathologic condition warranting the same serious attention accorded other forms of the disease, since hepatitis is always secondary to invasive lesions of the wall of the bowel. The "carrier" represents an active stage of the disease, often completely free of symptoms, and for this reason the most easily overlooked and neglected. In this stage of the disease the opportunity is greatest for prevention of serious and even fatal complications.

Diagnosis of amebiasis is made by the case history, physical examination, proctoscopy, examinations of stools and only occasionally roentgenologic examination. Proctoscopy can provide invaluable information. Of special importance here are the color of the mucosa and the presence of bleeding points plus mucus, edematous areas and ulcerations. Early diagnosis of amebic hepatitis permits cure by medical means alone. The treatment includes a full course of emetine hydrochloride amounting to 0.65 Gm., with full courses of either carbarsone, chiniofon or diodoquin. Small abscesses will probably respond to this therapy, while larger abscesses require aspiration.

The aim of specific therapy is eradication of all parasites from the host. This is best accomplished by resorting both to emetine and to the enteric drugs, one having its action on parasites within the tissues and the other on parasites within the lumen of the bowel. Emetine hydrochloride given parenterally acts solely on trophozoites within the tissues. It leaves relatively untouched the trophozoites and cysts outside the tissues in the lumen or on the surface of the bowel. The enteric drugs, such as chiniofon, diodoquin, vioform and carbarsone, act on trophozoites and cysts of the second group within the lumen of the bowel. Albright and Gordon emphasize that the same therapeutic principles should be applied for all forms of amebiasis regardless of the phase of symptomatology. In Hargreaves' experience penicillin has proved life saving in severe refractory cases due to secondary bacterial infection. An attack on invading bacteria with penicillin and succinylsulfathiazole produced a dramatic improvement in these cases and made them more amenable to specific antiamebic treatment.

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[1] Albright, E. C., and Gordon, E. S.: Present Status of the Problem of Amebiasis, Arch. Int. Med. **79**: 253 (March) 1947.

[2] Hargreaves, W. H.: The Treatment of Amebiasis, with Special Reference to Chronic Amebic Dysentery, Quart. J. Med. **15**: 1 (Jan.) 1946.

[3] Faust, E. C.: Susceptibility, Resistance and Spontaneous Recovery in Dogs Experimentally Infected with Endameba Histolytica, Proc. Soc. Exper. Biol. & Med. **29**: 659, 1932.

[4] Faust, E. C.: Amebiasis in the New Orleans Population as Revealed by Autopsy Examination of Accident Cases, Am. J. Trop. Med. **21**: 35 (Jan.) 1941.

Current Comment

EXPERIMENTAL INSOMNIA

Tyler reports[1] experiments on insomnia involving 600 subjects at the California Institute of Technology. Up to 112 hours of sleeplessness, no significant physiologic or biochemical changes were produced, except in the electrical activity of the brain. Little variation from the normal was noted in the blood sugar, hemoglobin, blood cell count, body weight and temperature. The excretion of total nitrogen and creatinine, ketosteroids, and the level of adrenal-like substances in the blood were little affected. The slight changes in blood pressure, respiration and heart rate that occurred could be attributed to the state of relaxation of the sleepy subjects. The psychologic disturbances were the most obvious changes that occurred. The alterations in behavior which were first noticed between thirty to sixty hours of sleeplessness were characterized by loss of memory, increased irritability, inattention and hallucinations or illusions. While in the majority of subjects these disturbances were mild, in some there were symptoms resembling those of acute schizophrenia. The only effects on psychomotor performance found were those that indicated reduced ability to maintain sustained effort and performance.

NEW EPIDEMIOLOGIC PROBLEMS

In discussing epidemiologic problems arising from human action in an instructive lecture titled "Epidemiology Today," Professor Burnet's[1] first example is infectious jaundice or hepatitis associated with the vaccination of American troops against yellow fever using vaccine containing small amounts of normal human serum. Infectious jaundice has appeared also after the use of syringes in the injection of penicillin and other medicines without thorough sterilization of the syringes between injections. The virus of one type of infectious jaundice may be in the blood of symptomless persons, and it can survive various procedures. Burnet's second example "of large-scale epidemiologic happenings produced by human action that was designed to prevent disease" is the development of strains of pathogenic organisms, particularly streptococci, which resist the action of sulfonamides and other drugs. In 1944 the recruits in many U. S. naval training camps were given sulfadiazine daily for some months in order to prevent streptococcic infections. The results were not satisfactory, as an unduly large number of such infections occurred. Two streptococcus strains (types 17 and 19) had acquired resistance to the action of sulfadiazine and infected persons who were receiving sulfadiazine for prophylaxis just as readily as virulent normal strains caused infection in unprotected persons. Fortunately the sulfonamide resistant strains remained sensitive to penicillin. Burnet likens the appearance of a drug resistant bacterial strain to the emergence of a new animal species. The events in naval training camps warn against subjecting a community or other large group to long continued chemoprophylaxis. Burnet also warns against dangers in far flung treatment of gonorrhea with a single drug. New and drug resistant strains of gonococci may become dominant, as in fact is illustrated by the sulfonamide resistant gonorrhea.

THE FIRST ARTIFICIAL SPRING LEG

Teele[1] comments historically on the accomplishments of two ingenious citizens of Milton, Mass., one Mr. Benjamin Crehore, the other Capt. Lewis Vose. In 1798 Crehore began to manufacture bass viols, the first made in this country. In 1800 he made the first pianoforte manufactured in this country. His ingenuity was further challenged by the appearance in Milton of Dean Weymouth, a young man who had lost a leg in the service of his country. Crehore conceived the idea of making a wooden leg for him with joints in the knee, the ankle and the foot. After many modifications he succeeded in fitting out an artificial limb which worked easily. Capt. Lewis Vose, a saddler, arranged and put in the straps to secure the leg in place and the padding to make it work with comfort. History further relates that Mr. Weymouth used the artificial limb for a long time but, failing to obtain the money to pay for it, was obliged to return it to Mr. Crehore. Subsequently the leg disappeared from where it had been deposited and its fate is unknown. This artificial limb was believed to be the first of its kind made in this country. To confirm the claim to priority of invention, a statement of the facts in the case has been inserted in the Boston *Transcript.* A year has elapsed without response; apparently the claim to priority holds good.

MONGOLISM AND INFECTIONS IN PREGNANCY

Mongolism is a congenital but not hereditary general maldevelopment the cause of which is not known. The discovery by Gregg and others in Australia that maternal rubella in pregnancy may be followed by congenital cataract as well as cardiac and other malformations in the child led Ingalls and Davies[1] to look into the question of intercurrent maternal infections in pregnancies which produced mongoloid children. In a preliminary note they record 7 such cases, one each of influenza, rubella, mumps, mastoiditis, pleurisy, "grippe" and otitis media with sinusitis. The fact that in 6 of the 7 cases the maternal infection occurred at about the second month of pregnancy is, as they say, "provocative." This note should stimulate physicians to furnish data to determine whether there is a definite correlation between maternal infection in pregnancy and mongolism. Whatever the outcome of such analysis may be, the relations of maternal rubella to malformations in the fetus demand that everything possible be done to exclude maternal infections in pregnancy.

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[1] Presented by David B. Tyler before the Federation of American Society for Experimental Biology and abstracted in the Federation Proceedings, part II, p. 218, March 1947.

[1] Burnet, F. M.: Epidemiology Today, M. J. Australia 2:825 (Dec. 14) 1946.

[1] Teele, A. K.: The History of Milton, Mass., 1640 to 1887, Boston, Press of Rockwell and Churchill, 1887.

[1] Ingalls, J. H., and Davies, J. A. V.: Mongolism Following Intercurrent Infectious Disease, New England J. Med. **236**: 437, 1947.

ORGANIZATION SECTION

Official Notes

GROUPS OF CLINICIANS TO AID SICK IN U. S. POSSESSIONS

Secretary of the Interior Krug recently requested the American Medical Association to appoint an advisory committee to select teams of competent clinicians to go for a short period to such places as Alaska, the Western Indian reservations, Puerto Rico and the Virgin Islands to aid the local physicians in the diagnosis and treatment of difficult cases of illness and to conduct clinics for the indigent with the view to provide a high grade of medical service. The advisory committee appointed comprises the Executive Committee of the Board of Trustees of the American Medical Association, Dr. George F. Lull, Secretary of the Association, Dr. Morris Fishbein, Editor of The Journal, and Dr. W. A. Morgan of Washington, D. C.

The first group, a Chicago team, departed from Minneapolis July 19 for three weeks of this service in Alaska. This team is composed of Drs. Jack Silverstein, Arthur Bernstein, George Holmes, Harry E. Barnett and John C. Fields, all from the Cook County Hospital in Chicago. The Alaskans will select their difficult cases in advance and assemble them in hospitals in order to avoid long trips and to save the time of the Chicago clinicians.

In accordance with Secretary Krug's request it is expected that another group of clinicians will be sent to Puerto Rico and the Virgin Islands in December for the purpose of aiding in difficult cases and of improving health conditions in those islands. The groups of clinicians selected will also work with public health officers, where they are available, in order to aid in bringing the best medical care to the underprivileged groups. Clinicians will be selected later from other medical centers to visit the Western Indian reservations. As this plan is expected to be continued, more clinical teams will be sent out next year.

Washington Letter

(From a Special Correspondent)

July 23, 1947.

U. S. Mission to Combat Health Problems in Greece

Three U. S. Public Health service officers were assigned to the American Economic Aid Mission to Greece to help that nation combat tuberculosis, typhoid, dysentery, hookworm, infant mortality and other medical problems. After a first hand study they may request assistance of other American medical workers. A health service spokesman said the trio, whose names were not announced, would help direct expenditure of the $3,000,000 public health fund requested from Congress. The Greek death rate from tuberculosis is reported to be between 250 and 450 per hundred thousand of population as compared with 40 in the United States. Tremendous sanitation problems resulted from destruction of 23 per cent of all dwellings in Greece. It was also announced that Dr. R. R. Sayres, director of the Federal Bureau of Mines, has resigned to rejoin the U. S. Public Health Service staff.

House and Senate Conference Studies National Science Foundation Bills

A Senate-House conference is ironing out differences in bills passed by both sides of Congress for establishment of a twenty-four member National Science Foundation to promote fundamental research for health and national defense. The group would supervise scientific activities for the government and promote "pure science." The House approved its bill by voice vote last week, and recently the Senate approved a similar measure by a vote of 79 to 8. The legislation, backed by President Truman and leading scientists, would set up a program costing between $20,000,000 and $30,000,000 annually. The group could not engage in atomic energy research without approval of the Atomic Energy Commission. The House bill would direct the foundation to formulate national policy for promotion of fundamental research and education in sciences, support research related to national defense, grant scholarships and graduate fellowships in medical, biologic and other sciences, foster interchange of scientific information in the United States and foreign countries, and establish special commissions on cancer research, on heart and circulatory diseases and on poliomyelitis and other degenerative diseases. Foundation members would be appointed by the President subject to Senate approval.

Board Appointed to Select Students for Study Abroad

President Truman did not appoint a medical person to the ten man Board of Foreign Scholarships set up to select American students for study abroad under the Fulbright act. The State Department has received about 12,000 applications, of which 5,000 are from veterans having preference under law. The law authorizes agreements with foreign governments to use part of moneys paid for American war surplus materials to finance studies of Americans in foreign educational institutions and for travel of foreign students to study in this country. Russia is not now eligible but may qualify under lend-lease settlement. Countries eligible are Australia, Austria, Belgium, Czechoslovakia, Denmark, Egypt, Finland, France, Greece, Hungary, Iran, Italy, the Netherlands, the Netherlands East Indies, New Zealand, Poland, Siam, Turkey, the United Kingdom, Burma, the Philippines and China.

Pan American Congress of Pediatrics to Meet in Mexico City in 1949

The Pan American Congress for Pediatrics selected Mexico City for the second congress, to be held in 1949. More than 600 delegates and guests attended the closing sessions here. Dr. Felix Hurtado of Cuba was chairman. The chairman of arrangements was Dr. Edgar P. Copeland; Dr. Harry A. Ong, was assistant chairman.

Coming Medical Meetings

Alaska Territorial Medical Association, Fairbanks, July 28-30. Dr. William J. Blanton, Juneau, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 4-6. Dr. James R. Bloss, 418 Eleventh St., Huntington 1, W. Va., Secretary.

American College of Surgeons, New York, Waldorf Astoria Hotel, Sept. 8-12. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2-6. Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr. Karl S. Richardson, 24 West Ohio St., Chicago, Business Manager.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Colorado State Medical Society, Denver, Shirley Savoy Hotel, Sept. 17-20. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

National Medical Association, Los Angeles, Aug. 18-22. Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va., Secretary.

Nevada State Medical Association, Reno, Sept. 4-6. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.

Oregon State Medical Society, Portland, Sept. 4-6. Dr. Thomas S. Saunders, 1020 S. W. Taylor St., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 15-18. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.

Southeastern Dermatological Association, Knoxville, Tenn., Hotel Andrew Johnson, Aug. 31. Dr. A. H. Lancaster, 608 W. Main Ave., Knoxville, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 11-13. Dr. Ray T. Woolsey, 610 McIntyre Bldg., Salt Lake City 1, Secretary.

Western New York and Ontario Urological Society, Saranac, N. Y., Saranac Inn, Sept. 3-6. Dr. Albert M. Crance, 525 S. Main St., Geneva, N. Y., Secretary.

Bureau of Information

LOCATION OF PHYSICIANS

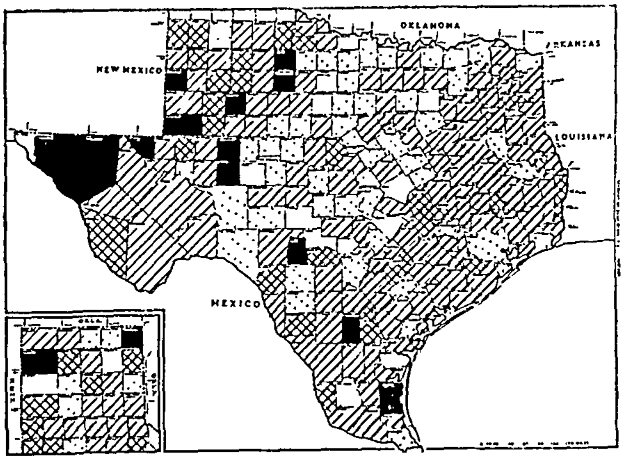
Virginia Shuler
Chicago

This is the sixth of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

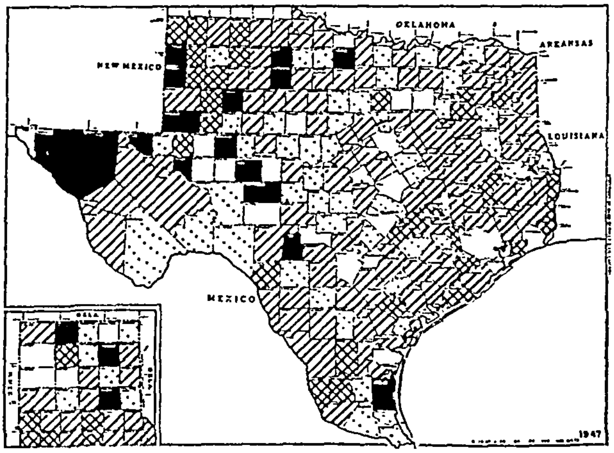
"Conditions in Texas are still somewhat abnormal. During the past year we have been successful in a good many instances in locating doctors in certain communities. Nevertheless, we still have a rather extensive list of areas where doctors are needed. We are doing our best to get this information into the hands of doctors seeking locations, including Texas physicians, as well as physicians in other states. Efforts are being made by the Association, in cooperation with the three medical colleges in Texas, to impress all graduates with the need for physicians in rural areas and the advantages offered by such areas. There are no areas in the state at this time where the need for physicians is really critical. In most areas there is at least one physician within a radius of 25 miles. That has always been true in Western and Southwestern Texas, which is largely sparsely settled ranching country. Migration of physicians during the past year has shown a trend of movement from rural communities to the cities. The rural communities, however, could benefit greatly if money available under the Federal Hospital Construction Act were to be used in the construction of needed hospitals and health centers. Texas has 254 counties and 129 local medical societies. Every county in Texas is embraced in some medical society. At present there are forty or fifty small towns, communities and villages in Texas that have requested physicians. Not all of these requests represent real need, but most of them do. We keep in close touch with the proper officials and committees of county medical societies as to the need for doctors in their respective jurisdictions. We do not always list applications filed with us by drug stores, chambers of commerce, civic clubs, and so forth, or even doctors. We carefully check each claim and list only the deserving."

Dr. Holman Taylor, Secretary,
State Medical Association of Texas,
1404 West El Paso Street, Fort Worth 3.

TEXAS—1946



TEXAS—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

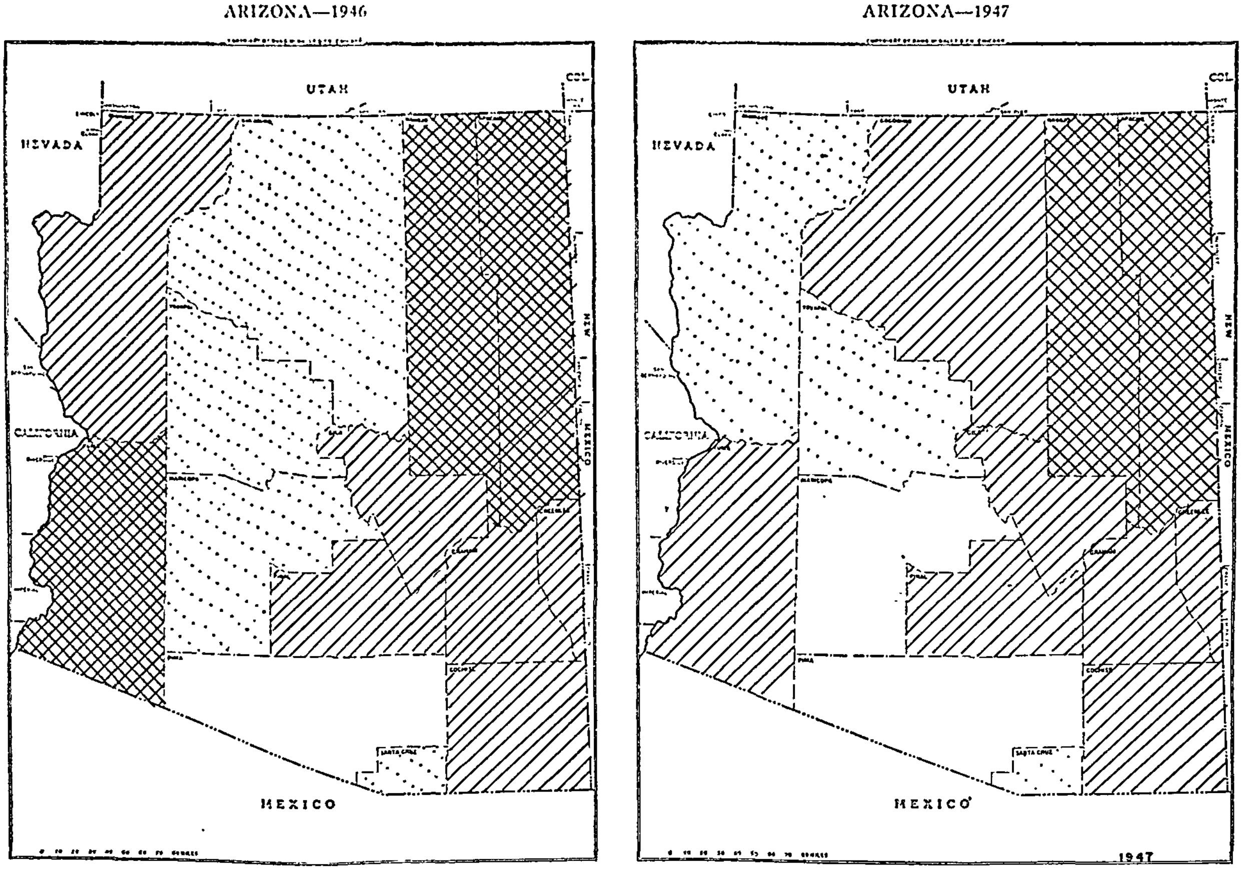
Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Texas Requesting General Practitioners

County	Town	Population
Austin	Wallis	815
Burleson		13,940
Burnet	Burnet	1,945
	Marble Falls	2,500
Cass	Avinger	624
Clay		9,488
	Henrietta	2,391
Cooke		24,909
Crane		2,841
Culberson		1,320
	Van Horn	1,130
Dallam	Dalhart	4,682
Denton	Lewisville	1,123
	Pilot Point	6,000
Donley		1,187
	Clarendon	3,000
Eastland	Eastland	3,849
Edwards		2,075
Gonzales		26,075
Gregg	Gladewater (Negro physician)	4,454
Hall		...
	Memphis	3,869
	Turkey	930
Hamilton		13,303
Hansford	Spearman	1,200-1,400
Harris	Seabrook	862
Harrison		...
Hemphill	Canadian	2,151
Henderson		31,822
Hill	Blum	441
	Hillsboro	7,799
	Itasca	1,759
	Malone	429
Houston	Crockett (Negro physician)	4,536
Jim Wells	Alice	7,732
Karnes	Runge	1,001
Kaufman	Kemp	1,000
	Terrell (Negro physician)	10,481
Kenedy		700
Kinney		1,391
Lamar	Paris	18,678
Lee	Dime Box	300
	Lexington	531
Leon		17,733
McLennan	Crawford	471
	McGregor	2,062
Menard		4,521
Montague	Nocona	2,605
	Saint Jo	1,010
Newton		13,700
	Newton	1,400
Raine	Emory	886
Real	Camp Wood	778
	Leakey	500
Reeves		9,423
	Pecos	4,853

Areas in Texas Requesting General Practitioners—Continued

County	Town	Population
Runnells	Ballinger	4,472
Sabine		10,896
San Augustine		12,471
San Patricio	Portland	907
San Patricio and Aransas	Aransas Pass	4,095
Shelby		29,235
Smith	Lindale	820
	Troup	1,526
Somerville	Glen Rose	1,050
Terrell		2,388
Tipscomb	Higgins	741
Titus	Mount Pleasant	4,528
	Talco	912
Tyler	Woodville	1,500
Upshur	Gilmer	3,138
Walker	Huntsville	5,108
Ward		10,121
	Monahans	3,944
Winkler		4,878
	Kermit	2,584
	Wink	1,954
Wise	Bridgeport	1,735
	Decatur	2,578
Zavala	Crystal City	6,529


ARIZONA—1946

ARIZONA—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over. solid black area no doctor.

Area in Arizona Requesting General Practitioner

County	Town	Population
Gila	Payson	487

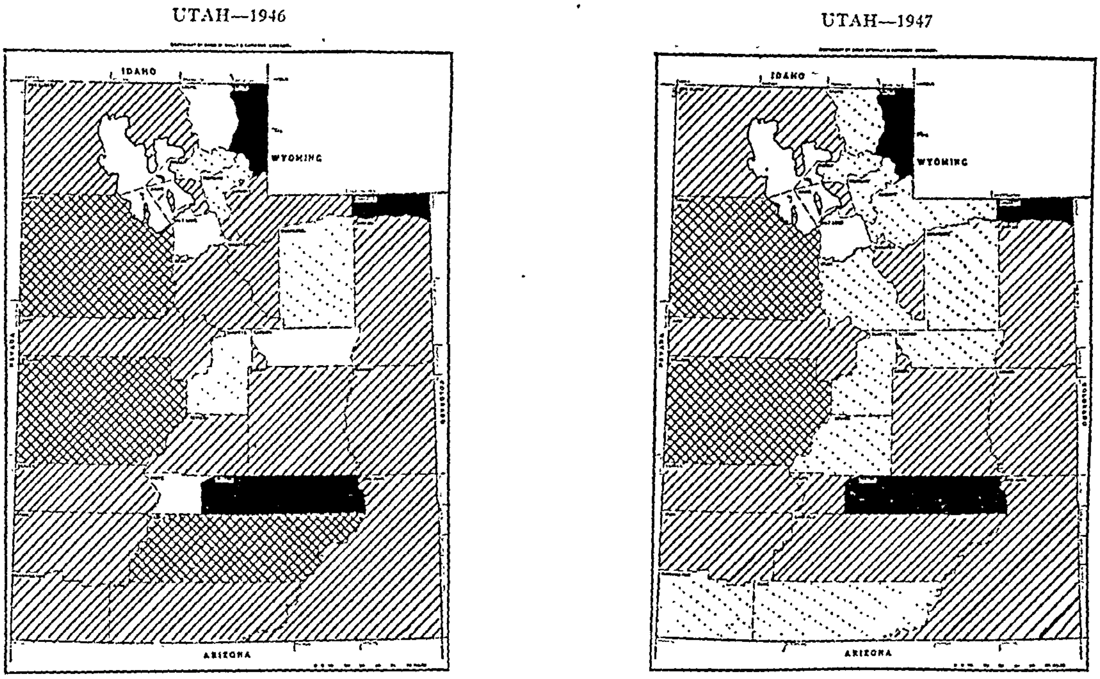
"Arizona is a state of great geographic distances, yet there are but fourteen counties in the vast expanse of the state. Each county maintains a county medical society, hence its populace is assured medical care. Several of the counties have heavy Indian populations and a scattered white population of lesser numbers. Two of the counties, Maricopa and Pima, account for better than two thirds of the white population of the state, Phoenix and Tucson (Maricopa and Pima counties respectively) being the two cities in which the population is centralized. Aside from these two cities there are few other towns equaling or topping 15,000 in population.

"All communities in the state supporting hospitals are presently well supplied with physicians and surgeons. The outlying districts needing and desiring more medical personnel will first need to set up hospitals and local facilities for the care of their sick.

"On the whole, Arizona has a full complement of doctors of medicine when facilities for caring for the sick of the state are fully considered. Specialists in practically every field of practice, and certified specialists, are fully represented in this complement of physicians and surgeons.

"As the white population in the more remote areas of the state increases and as hospital facilities become available in these areas, the spread of high class physicians and surgeons in such communities may be anticipated."

DR. FRANK J. MILLOY, Secretary,
The Arizona State Medical Association,
423 Heard Building, Phoenix.



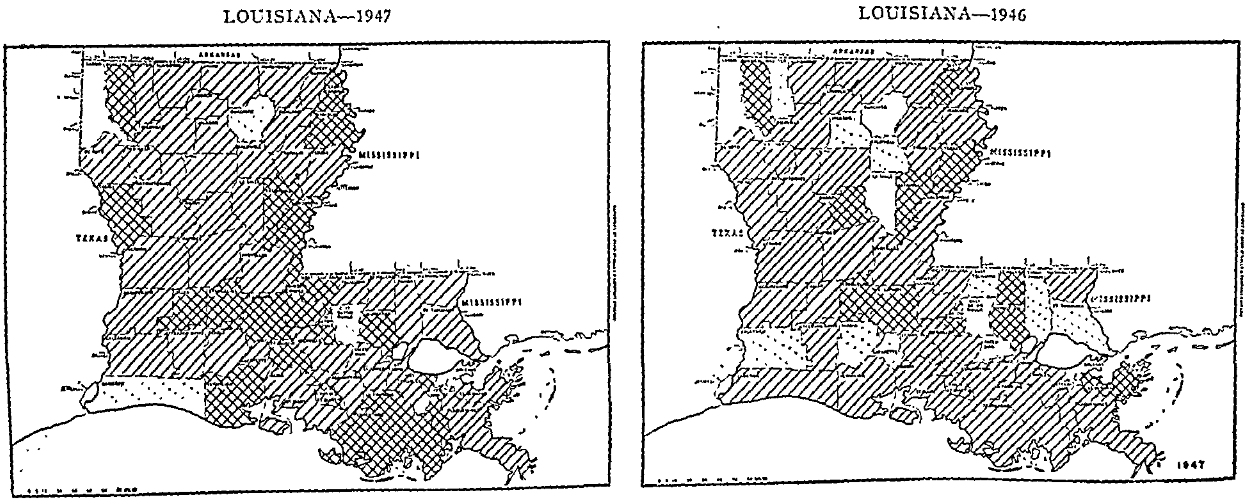
Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Utah Requesting General Practitioners

County	Town	Population	County	Town	Population
Beaver	Milford	1,393	Salt Lake		211,623
Duchesne		8,958	San Juan		4,712
	Duchesne	907	Tooele		9,138
Juat		7,392		Tad Park	2,000
Millard		9,613	Uintah		9,898
	Delta	1,304	Wasatch		5,754
Rich	Randolph	500		Kamas	1,500
Summit		8,714	Wayne	Loa	550

Mr. W. H. Tibbals, Executive Secretary,
Utah State Medical Association,
68 S. Main Street, Salt Lake City.



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by parish.

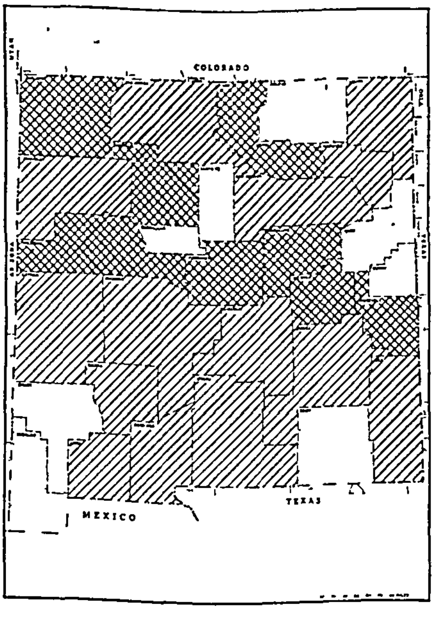
Key: Physician-population ratio by parish: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Louisiana Requesting General Practitioners

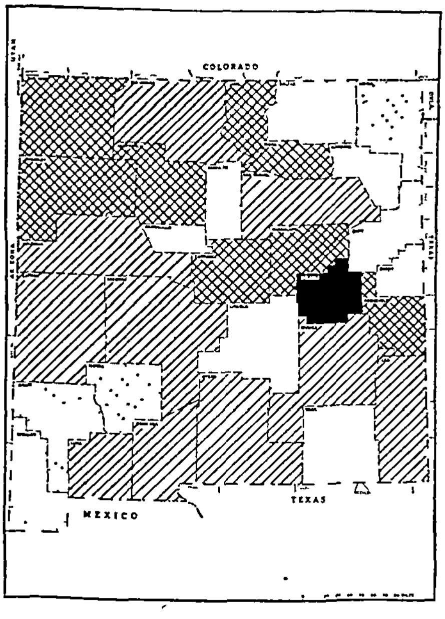
Parish	Town	Population
Acadia	Church Point	1,892
Allen	Oakdale	3,933
Avoyelles	Cotton Port	1,196
	Moreauville	815
Beauregard	Merryville	1,216
Bienville		23,931
Caddo	Belcher	300
	Oil City	1,447
Caldwell	Columbia	917
Catohoula		14,618
Claiborne		29,855
	Homer	3,497
DeSota	Mansfield	4,065
East Carroll	Lake Providence	3,711
East Feliciana	Jackson	5,384
Franklin	Winnsboro	2,834
	Wisner	617
Grant	Colfax	1,354
Iberville	Carville	250
	Maringouin	708
Lafayette	Lafayette	19,210
LaSalle	Urania	1,016
Lincoln	Choudrant	435
	Dubach	749
	Ruston	7,107
Madison	Tallulah	5,712
Morehouse	Oak Ridge	373
Natchitoches		40,997
Plaquemines	Buras	1,183
	Burrwood	400
Red River	Coushatta	1,289
Sabine	Many	1,474
	Pleasant Hill	737
St. Charles	Norco	1,529
St. John the Baptist	Edgard	268
	Reserve	[illegible],000
St. Landry		71,481
	Eunice	5,254
	Opelousas	8,980
	Port Barre	929
	Washington	1,264
St. Mary	Franklin	4,274
St. Tammany	Covington	4,123
Tangipahoa	Ponchatoula	4,001
Union		18,203
Vernon		19,142
	Leesville	2,829
Webster	Cotton Valley	1,199

Dr. P. T. Talbot, Secretary,
Louisiana State Medical Society,
1430 Tulane Avenue, New Orleans.

NEW MEXICO—1946



NEW MEXICO—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county

Key. Physician population ratio by county plain area 1 999, dotted area 1,000 1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor.

Areas in New Mexico Requesting General Practitioners

County	Town	Population
Guadalupe	Santa Rosa	2,310
Quay	San Jon	650
	Tucumcari	6,194
Roosevelt	Elida	330
San Miguel		27,910
Taos		18,528

"In general, I should say that the cities of 5,000 or more in population are well supplied with physicians at the present time, with the possible exception of a few specialists, such as nose and throat men, which are needed in certain areas In the rural areas there are still several localities which are entirely without any physician One could conservatively estimate that there are at least a dozen areas in the rural sections—towns of about 1,000 population—where good general practitioners are needed"

Dr H L January, Secretary,
New Mexico Medical Society,
Albuquerque

GOVERNMENT SERVICES

ARMY

ARMY AWARDS AND COMMENDATIONS

Colonel Derrick T. Vail

The Legion of Merit was recently awarded to Dr. Derrick T. Vail, now professor of ophthalmology at Northwestern University Medical School, Chicago. The presentation was made June 3 by Dr. Paul R. Hawley, medical director of the Veterans Administration, for outstanding services rendered in the European Theater of Operations from Oct. 5, 1942 to Oct. 14, 1944, when Colonel Vail served as senior consultant in ophthalmology at ETO headquarters. The citation read in part as follows: In addition to establishing and maintaining a singularly high standard for the treatment and supervision of ophthalmologic cases, Colonel Vail demonstrated exceptional qualities of adaptability and a thorough professional knowledge by encouraging the adoption of many improvements, resulting in the conservation of time and manpower. His whole hearted interest in the rehabilitation and care of blinded American soldiers, his keen foresight and exceptional devotion to duty reflect the highest credit on himself and on the armed forces of the United States. Dr. Vail graduated from Harvard Medical School, Boston, in 1923 and entered the military service in September 1942.

Colonel William D. Graham

The Legion of Merit has been awarded to Col. William Donald Graham, M. C., U. S. Army. The citation read in part as follows: For performing exceptionally meritorious services as commanding officer of the 158th General Hospital in England from November 1944 to July 1945. He was responsible for the outstanding accomplishments of the hospital in the field of neurosurgery and plastic surgery during a period of maximum flow of casualties. His work has reflected great credit on the Medical Department of the United States Army. Dr. Graham graduated from the University of Minnesota Medical School in 1930 and entered military service in 1934.

Colonel L. Holmes Ginn Jr.

The United States of America Typhus Commission Medal has been awarded to Col. L. Holmes Ginn Jr., M. C., U. S. Army. The citation read as follows: He performed meritorious service in connection with the work of the United States of America Typhus Commission during the period May 8 to July 10, 1945 in the Rhine Province Military District, Germany. As surgeon of the Fifteenth United States Army he exhibited keen foresight and rare judgment in planning and directing effective typhus fever control measures throughout the army area. Colonel Ginn has also been awarded the Legion of Merit and the Bronze Star Medal with the Oak Leaf Cluster. Colonel Ginn graduated from the Medical College of Virginia, Richmond, in 1927 and entered the military service in July 1927.

Major Arthur R. Hummel

The Legion of Merit was recently awarded to Major A. R. Hummel, M. C., A. U. S., now of Detroit, for exceptionally meritorious conduct in the performance of outstanding services in the Middle East from January 1943 to November 1945. Dr. Hummel graduated from Wayne University College of Medicine in Detroit in 1941 and entered the service June 12, 1942.

Dr. Herald R. Cox

The United States of America Typhus Commission Medal has been awarded to Dr. Herald R. Cox of Pearl River, N. Y. The citation read as follows: Dr. Herald R. Cox, civilian, distinguished himself as a consultant to the United States of America Typhus Commission from December 1942 to December 1945. While continuing his notable work with the development of typhus vaccine, he also gave valuable aid in producing serums to treat diseases of the typhus group and in investigating the problems of a vaccine against scrub typhus. His work was highly beneficial in the campaign against typhus fever and was a distinct contribution to scientific knowledge. Dr. Cox graduated from the School of Hygiene, Johns Hopkins University, in 1931.

NAVY

NAVY AWARDS AND COMMENDATIONS

Rear Admiral Charles S. Stephenson

The Legion of Merit has been awarded to Rear Admiral Charles S. Stephenson (MC), U.S.N., retired, of Washington, D. C. The citation read in part as follows: For exceptionally meritorious conduct in the performance of outstanding services as medical officer in charge of the division of preventive medicine in the Bureau of Medicine and Surgery and as navy medical representative on the National Research Council from Sept. 8, 1939 to Nov. 24, 1942. Displaying outstanding organizational ability and farsightedness in making recommendations concerning the preservation of health, he was in large measure responsible for safeguarding and maintaining the excellent physical condition of Navy, Marine Corps and Coast Guard personnel during World War II. He contributed to the success of the National Research Council in the execution of its vital war mission. His professional skill, initiative and tireless devotion to duty reflect the highest credit on himself and the United States Naval Service. Dr. Stephenson graduated from the Medical School of Vanderbilt University in 1912 and entered the naval service in 1913.

Captain Frederick R. Hook

The Navy Commendation Ribbon has been awarded to Capt. Frederick R. Hook (MC), U.S.N. The citation read as follows: For outstanding performance of duty as medical officer in command of the United States Naval Hospital at Oakland, Calif., from Sept. 1, 1942 to Nov. 15, 1943. By his outstanding professional and organizational skills he was in large measure responsible for completion of the expansion program which made his hospital the third largest naval hospital in the nation. Through his untiring efforts during this period he contributed to the efficient treatment rendered to thousands of war casualties and to the expeditious return to duty of a majority of these patients. Captain Hook's fulfilment of his exacting assignment was in keeping with the highest traditions of the United States Naval Service. Dr. Hook graduated from the University Medical College of Kansas City in 1913 and entered the military service in November 1917.

Captain James R. Thomas

The Navy Commendation Ribbon has been awarded to Capt. James R. Thomas (MC), U.S.N. The citation read in part as follows: For outstanding performance of duty as medical officer in command of the United States Naval Mobile Hospital Number One from May 2, 1942 to Oct. 31, 1943; and subsequently as medical officer in command of the United States Naval Hospital, Corpus Christi, Texas, from Nov. 10, 1943 to Aug. 1, 1945. By his constant devotion to the exacting details of his assignments, he contributed materially to the war effort and upheld the highest traditions of the U. S. Naval Service. Dr. Thomas graduated from the University of Illinois College of Medicine in 1917 and entered the naval service in September 1917.

Lieutenant Commander Charles R. Gennaria

The Navy Commendation Ribbon has been awarded to Lieut. Comdr. Charles R. Gennaria (MC), U.S.N.R., of Shamokin, Pa., for excellent service as senior medical officer aboard the U. S. S. *Leedstown* from Jan. 31 to Oct. 20, 1944, during the amphibious assaults and capture of Kwajalein, Guam, Peleliu and Leyte. During this period he organized and directed the activities of his department, which was taxed far beyond its normal capacity by the casualties from enemy action. That an exceptionally low death rate was achieved despite the fact that many of the seriously wounded were long delayed in reaching the ship is recognized in the citation as affording testimony to his outstanding ability and devotion to duty. His conduct and courage were at all times in keeping with the highest traditions of the United States Naval Service. Dr. Gennaria graduated from Jefferson Medical School in 1923 and entered the naval service Sept. 24, 1942.

PUBLIC HEALTH SERVICE

DR. SPENCER RESIGNS AS CHIEF

Dr. R. R. Spencer has resigned as chief of the National Cancer Institute of the U. S. Public Health Service, Washington, D. C., and Dr. Leonard A. Scheele, assistant chief of the institute, has been appointed chief. Dr. Spencer's resignation does not mean that he will withdraw from the work of the institute. He desired to be relieved of the increasing load of administrative duties in order to spend full time on "two phases of the cancer program that interest him most—professional education and research." In his new capacity he will direct the institute's expanding program for professional training of young physicians in the diagnosis and treatment of cancer and at the same time carry on research on the mechanism of cellular and species survival, which is related to the cancer process. Dr. Spencer is widely known also in the field of research for work in association with R. R. Parker in developing a vaccine against Rocky Mountain spotted fever.

Dr. Scheele has been in the Public Health Service since 1933 and was a member of the staff of the institute for several years before the war. During the war he served in Italy in Military Government and Allied Commission operations and later was in charge of the preventive medicine section of a division of supreme headquarters, Allied Expeditionary Force in Northwest Europe. He was also a representative of the medical section of the Allied Control Council in its initial operations in Berlin after Germany surrendered. He has been awarded the American Typhus Commission Medal and the Legion of Merit.

DR. IVY EXECUTIVE DIRECTOR OF ADVISORY COUNCIL

Dr. A. C. Ivy, Chicago, vice president of the University of Illinois, has been appointed executive director of the National Cancer Advisory Council to succeed Dr. George M. Smith, professor emeritus of Yale University, who resigned for reasons of health. Dr. Ivy, who was for many years head of the Department of Physiology at Northwestern University Medical School, has been a member of the council for two years. He will take up the part time post as executive director of the council on his return from Germany late in July.

VETERANS ADMINISTRATION

EDUCATIONAL COURSES FOR DISABLED VETERANS

About two hundred complete educational courses, ranging from high school subjects to automobile mechanics, are available to ill and disabled veterans in Veterans Administration hospitals. They are offered to patients as part of their educational therapy activities. The courses cover, in addition to academic high school material, a variety of prevocational and vocational technical subjects such as poultry raising, radio repair, photography and plastics. Commercial subjects include shorthand, typing, bookkeeping and problems of operating a small business. The two hundred courses available are listed in a catalogue distributed to all 126 Veterans Administration hospitals and homes.

One armed patients can learn to type in special classes organized by the Veterans Administration educational retraining sections. Despite their handicaps, these patients use standard typewriter keyboards in the course.

AWARD TO DR. HAWLEY

Dr. Paul R. Hawley, chief medical director of the Veterans Administration, has been awarded the Gorgas Award for 1947, which will be presented to him in Boston at the annual meeting of the Association of Military Surgeons, November 13-15. This award is given annually by the executive council of the Association of Military Surgeons for some notable contribution in the field of military medicine. It is sponsored by Wyeth, Incorporated, Philadelphia.

HOSPITAL IN MONTANA

The army engineers at Fort Peck, Montana, have opened the bids received for the construction of the 100 bed veterans' hospital at Miles City. The lowest bid was $4,437,000, which was 32 per cent above the government estimate of the cost of construction, and so no award has as yet been made.

PERSONALS

Brig. Gen. Guy B. Denit, who is on duty in the Surgeon General's Office, received the honorary degree of Doctor of Science from the Medical College of Virginia, Richmond, June 17.

Dr. Julian J. Keller has been assigned chief surgeon of the veterans' hospital at Tuscaloosa, Ala. Dr. Keller, who has been in the Veterans Administration service for many years and during World War II served in the medical corps of the Army, recently was on the staff of the veterans' hospital at Bay Pines, Fla.

Dr. Cyril H. Francis, Columbus, Ohio, has been appointed medical director for the Veterans Administration in Ohio, Michigan and Kentucky. Dr. Francis has been serving as chief of professional services with the Veterans Administration. He served in the navy medical corps during the war and previous to that time was in private practice in Los Angeles.

Dr. George T. McMahan has been assigned as manager of the Veterans Administration hospital at Gulfport, Miss., succeeding Dr. G. T. Sheffield, who has been assigned at his own request as psychiatrist to the Veterans Administration center at Biloxi.

Dr. Robert C. Cook, deputy director of the Veterans Administration department of medicine and surgery, represented the Veterans Administration at the International Congress of Military Medicine and Pharmacy in Switzerland, June 2-9. Dr. Cook is a graduate of Rush Medical College in Chicago and has been with the Veterans Administration since 1919.

Dr. Arthur Leiter has been appointed general medical examiner in Indiana by the Veterans Administration and will be located in Indianapolis. Dr. Leiter formerly practiced in Columbia City, Ind., and was health commissioner of Whitley County.

The plan to assign Dr. Cameron S. Guild to the branch office in San Francisco (THE JOURNAL, May 24, p. 384) was changed and he has been assigned to the branch office in New York City.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Bashinsky, Leo M.	Birmingham
Bograd, Nathan	Montgomery
Bouchelle, McLemore	Birmingham
Britton, James W.	Anniston
Conwell, Donald P.	Jasper
Culbreth, George G.	Andalusia
Fackler, William B. Jr.	Wadley
Graves, Robert S.	Gadsden
Greenlees, David L.	Greensboro
Horne, Cecil P.	Montgomery
McCorkle, Walter W.	Gadsden
McVay, Leon V., Jr.	Mobile
Merrill, Byrd F.	Dothan
Nettles, Thomas E.	Tunnel Springs
Rollins, Stacy L. Jr.	Atmore
Timberlake, Gideon B.	Stevenson
Underwood, Ralph O.	Phil Campbell

Arkansas

Calaway, Robert L.	Little Rock
Costley, Lawson C. Jr.	Pine Bluff
Gladden, Jean C.	Harrison
Kerr, Robert T.	Little Rock
Vandergriff, Harris T.	Paragould
Wade, Henry K., Jr.	Hot Springs
Watson, John E.	Little Rock

California

Anderson, Milford X.	Los Angeles
Babcock, Kenward O.	Ontario
Beard, Crowell	San Mateo
Bode, Arnold G. H.	Sierra Madre
Bouland, Thomas G. Jr.	Glendale
Bridwell, Willard S.	Glendale
Brizzolara, Louis G.	San Francisco
D'Elia, Alphonse E.	Wilmar
deSilva, Paul L.	Oakland
Dolkas, Constantine P.	Alhambra
Dutra, Frank R.	Sacramento
Faust, Joseph M.	Los Angeles
Finkle, Eugene D.	Oakland
Graham, William H.	Crescent City
Green, Robert L.	Los Angeles
Griffin, Herschel E.	San Francisco
Hepplewhite, James G.	Chico
Hibbard, Lester T.	Los Angeles
Holladay, William T.	Long Beach
Hopkins, Robert E.	Lodi
Jeans, Howard S.	Pasadena
Juul, Clement O.	Oakland
Kane, Carl L.	Glendale
Klein, Thomas	Madera
Lambert, Edward R.	Santa Barbara
Magg, Davin	Hollywood
McNiel, Ralph W.	Alhambra
O'Connor, John J.	San Francisco
Robinson, Harold H. Jr.	Sacramento
Rosenberger, Maurice D.	Los Angeles
Rosenburg, Marvin J.	Los Angeles
Salomon, Maurice S.	San Francisco
Schwartz, Monte	San Francisco
Schwartzman, Herman	Belden
Scott, Robert F.	Los Angeles
Shipounoff, George C.	San Francisco
Stadtner, David A.	San Francisco
Steinbach, Owen K.	Los Angeles
Taketa, Tom	Tulelake
Thomas, Robert C.	Vallejo
Uyeyama, Kahn	Berkeley
Van Deventer, William C.	Long Beach
Van Scoyoc, James G. Jr.	Los Angeles
Vaughan, Robert A.	Los Angeles
Weeden, William F.	Alameda
White, Manuel	Berkeley
Wickett, William H. Jr.	Fullerton
Wilson, William H.	Redlands
Yates, Charles D.	Modesto

Colorado

Burnett, Berry H.	Englewood
Dunklee, George M.	Denver
Hall, Robert F.	Grand Junction
Lombardi, James C.	Denver
Marasco, Paul B.	Grand Junction
Midkiff, Layton D.	Denver
Miller, William C.	Trinidad
Twombly, George C. Jr.	Fort Morgan
Vanden Bosch, Marvin P.	Denver
White, Stanley M.	Denver
Wurtzebach, Lorenz R.	Denver

Connecticut

Beloff, Jerome S.	Meriden
Brooks, Wilbur S.	East Haddam
Freeman, Joseph	New London
Haley, John C.	Mt. Carmel
Jenkins, Ward S.	Danbury
Moser, David W.	Rocky Hill
Reidy, Joseph C.	Winsted
Spellman, Francis A.	New Haven

Delaware

Hall, Samuel W. III	Dover
Keyser, Morton	Wilmington
Stillman, Eugene H.	Wilmington

District of Columbia

Corey, Merle I.	Washington
Dowd, James F.	Washington
Evans, Peyton R. Jr.	Washington
Greenberg, Arnold S.	Washington
Greenlee, Charles E.	Washington
Hensel, Albert E. Jr.	Washington
Johnsen, David S.	Washington
Weller, George L. Jr.	Washington

Florida

Breinin, Goodwin M.	Miami Beach
Corso, Vincent P.	Miami
Erwin, Charles R.	Miami
Grimes, George R.	West Palm Beach
Henschen, Hal	Oakland
Petteway, Charles H.	Lakeland
Wilson, Charles F.	Orlando
Wing, Breckinridge W.	Winter Park

Georgia

Brannen, Edmund A.	Atlanta
Brown, Charles E.	Barnesville
Clary, Thomas L. Jr.	Augusta
Deen, Oliver F. Jr.	Douglas
Fisher, Albert Jr.	Macon
Galloway, William H.	Atlanta
Griffith, Joseph E.	Adairsville
Jordan, Willis P. Jr.	Columbus
Kelly, Gordon McN.	Augusta
McMillan, Eugene C. Jr.	Atlanta
Palmer, Clarence B.	Covington
Ross, Thomas L.	Macon
Smith, Reuben E.	Lawrenceville
Wood, David L.	Dalton

Idaho

Farber, Jack R.	Payette
Paull, Don R.	St. Anthony
Sutton, Richard P.	Oakley
Taylor, Eugene E.	Moscow

Illinois

Barrett, Charles V. Jr.	Chicago
Briskin, Harold L.	Chicago
Brown, William H.	Chicago
Byers, Richard S.	Granite City
Coombs, James W.	LaGrange
Curtiss, Paul H. Jr.	Harvey
Delicate, William E.	Edwardsville

Illinois—Continued

Douglass, Thomas C.	Chicago
Eissler, Kurt R.	Chicago
Fish, William D.	Evanston
Freier, Morton L.	Chicago
Greene, Warren W.	Skokie
Greenwood, Benjamin S.	Champaign
Haeberlin, John B. Jr.	Chicago
Henke, Charles P.	Chicago
Henry, Nelson W.	Chicago
Hofrichter, Frank C.	Chicago
Icenogle, Grover D.	Chicago
Irwin, George E. Jr.	Kankakee
Kaemerle, Harold K.	Chicago
Kendall, Hillis E.	Villa Grove
Kruglik, Meyer	Chicago
Lambert, Claude N.	Chicago
Leibovitz, Martin	Chicago
Maguire, Roderick H.	Chicago
Marzano, Vincent V.	Chicago
Miller, Jacob M.	Chicago
Moore, Stanley W.	Vandalia
Murfin, Walter W.	Decatur
Prempas, Thomas G.	Chicago
Rappaport, Henry	Chicago
Rose, Gabriel	Kankakee
Rosenberg, Edward F.	Chicago
Rosenberg, Sidney	Chicago
Rosenthal, Sol R.	Chicago
Rosi, Alcide L.	Chicago
Schwerin, George S.	Chicago
Schweitzer, Albert W.	Lexington
Scott, Thomas G.	Dwight
Sellett, Andrew J.	Peru
Shaffer, William T.	Chicago
Sklar, Isidore A.	Chicago
Soffer, Joseph I.	Chicago
Stone, Bernard M.	Chicago
Strauch, Franz A.	Chicago
Streicher, Daniel L.	Chicago
Tarnoff, Joseph F.	Chicago
Tomlinson, William A.	Springfield
Vandenberg, Roy E.	Dolton
Wechsler, Jacob I.	Chicago
Weiland, Albert S.	Chicago
Weisberg, Seymour W.	Chicago
Werth, Joseph A.	Waterloo
White, Michael S.	Chicago
Winter, Tyrus D.	Belleville

Indiana

Bethea, Robert O., Jr.	Madison
Brown, David B.	Gary
Downard, Leland F.	Liberty
Eaton, Merrill T. Jr.	Bloomington
Ettl, Edward J.	South Bend
Foxworthy, Donald T.	Madison
Garrett, Robert A.	Indianapolis
Gregg, Edwin E.	Indianapolis
Hanson, Mark C.	Indianapolis
Headlee, Charles R.	Indianapolis
Hodurski, Zigfield	Indianapolis
Kuhn, Frederick L.	Plymouth
Lovett, Harvey D.	Zionsville
Ludwick, Harry A.	South Bend
Malstaff, Comiel M.	South Bend
McClellan, John B.	Muncie
Mellen, John R.	Indianapolis
Price, Ronald D.	Indianapolis
Randak, Edward F. Jr.	Crawfordsville
Sandy, William A.	Indianapolis
Sheller, Tom G.	Akron
Siebenmorgen, Paul	Terre Haute
Symmes, Alfred T.	Indianapolis
Thom, Jay W.	Gosport
Van Ness, William C.	Summitville
Westfall, George S.	Indianapolis
Wisenbaugh, Paul E.	North Liberty

PHYSICIANS SEPARATED FROM SERVICE

Iowa

Beebe, Kenneth P.	Wever
Blair, Donald W.	Dubuque
Brown, David R., Jr.	Sioux City
Butterfield, Elwyn T.	Jefferson
Dye, William S., Jr.	Centerville
Fitzpatrick, Matthew R.	Mason City
Foley, Walter E. Jr.	Davenport
Fox, Robert T.	Hubbard
Hicks, Murwyn L.	Iowa City
Kersten, Paul M.	Fort Dodge
Kessler, Donald L.	Cedar Rapids
Olson, Ranald E.	Montezuma
Smiley, George W.	Grinnell

Kansas

Abbuehl, Don R.	Atchison
Knosp, Norman C.	St. Francis
Merriam, Wallace	Kansas City
Meyer, Paul W.	Kansas City
Miller, Ted W.	Arkansas City
Swan, Major M.	Erie
Vander Velde, Stanley L.	Emporia

Kentucky

Bisig, Charles J.	Louisville
Gilliam, Melvin R.	Danville
Haynes, Philip E.	Hopkinsville
Krupp, Abraham W.	Louisville
Lowry, Conie C.	Princeton
McCabe, Robert J.	Covington
Quertermous, John C.	Salem
Rosenbaum, Orvin S.	Louisville
Roy, William A.	Lexington
Walker, John W., Jr.	Irvine
Wygal, James M.	Corbin

Louisiana

Appleby, Homer Q.	Slaughter
Bethea, Hardee	New Orleans
Davidoff, Theodore	DeRidder
Dreyfus, Albert E.	New Orleans
Finkelstein, Julius	New Orleans
Landry, Louis V.	Port Allen
Leake, William S. Jr.	New Orleans
Mayer, Louis Jr.	Baton Rouge
Mellinger, George T.	New Orleans
Mintz, Stanley R.	Monroe
Ragan, Charles J.	Pineville
Robichaux, Richard E.	Raceland
Sellers, Harry W.	Alexandria
Swindle, James T.	New Orleans
Tyler, Thomas B.	New Orleans
Zoller, Harry	New Orleans

Maine

Herrick, Carleton S. Jr.	South Brewer
Oestrich, Alfred	Mexico
Robertson, Frank O. Jr.	Bethel

Maryland

Blumenthal, Leonard E.	Baltimore
Bondurant, Herbert W.	Chevy Chase
Buckey, Robert B.	Baltimore
Dann, Alfred H.	Baltimore
Genecin, Abraham	Baltimore
Haigley, Thomas B.	Baltimore
Johnson, Robert W. III	Baltimore
Kaiser, Irwin H.	Baltimore
Kemper, Charles A.	Baltimore
Kleiman, Bernard S.	Baltimore
Muse, William T.	Baltimore
Parker, Robert T.	Towson
Pearce, William F.	Baltimore
Polek, Melvin F.	Baltimore
Rinehart, Arthur M.	Baltimore
Royer, Earl L.	Woodlawn
Spier, Andrew A.	Cumberland
Taylor, Irving J.	Ellicott City
Varner, Philip H.	Chevy Chase

Massachusetts

Ambadgis, Theodore T.	New Bedford
Armitage, Henry G. Jr.	Haverhill
Bell, John F.	Boston
Chansky, Daniel	Dorchester

Massachusetts—Continued

Bonner, Charles D.	New Bedford
Crocker, Augustus T.	Boston
Crocker, Seth C.	Milton
Dobelle, Martin	Pittsfield
Fine, Michael B.	Dorchester
Flaherty, James R.	Worcester
Grokoest, Albert W.	Norwood
Guterman, Bert	Worcester
Hunter, Richard E.	Worcester
Hurley, Joseph P.	Worcester
Kirby, Francis A., Jr.	Whitman
Lake, Fredric D.	Springfield
Liberman, Charles	Winthrop
Magno, Henry A.	Malden
Malone, Edward H.	Jamaica Plain
Maloney, John M.	Springfield
Oppenheim, Harry	Dorchester
Shea, Daniel J. Jr.	Chestnut Hill
Spence, Philip S. Jr.	Boston
Sullivan, Richard J.	North Brookfield
Suzor, Lester G.	Chicopee
Tavares, John M.	Somerville
Turner, Harland G.	Boston
Velonis, Stamatis G.	Marblehead
Weinstein, Abraham	Roxbury
Wigglesworth, William C.	Harvard

Michigan

Bird, Harrie W. Jr.	Bloomfield Hills
Burton, Irving F.	Detroit
Byberg, Robert A.	Detroit
Clark, William P.	Hudson
Haeck, William	Grand Rapids
Hall, Edward J.	Hartford
Hayner, Russell A.	Howell
Jackson, William F.	Rogers City
Jones, Melvin C.	Bay City
Lovell, Barney K.	Detroit
Milgrom, Sidney	Detroit
Mulder, Gerrit A.	Grand Rapids
Phillipson, Chester	Flint
Rosenbaum, Herbert	Detroit
Roth, Emil M.	Grand Rapids
Ruhl, Frank G. Jr.	Detroit
Sorensen, Maurice G.	Detroit
Thompson, John R. Jr.	Tecumseh
Usndek, Harold E.	Detroit
Van Solkema, Arthur	Grandville
Wallaert, Albert A. J.	Detroit

Minnesota

Boardman, Dalmon V.	Twin Valley
Carlander, Lester W. Jr.	Minneapolis
Coughlan, Vernon H.	Minneapolis
Countryman, Frank W.	St. Paul
Davis, Thayer C.	Wadena
Estrem, Ralph L.	Fergus Falls
Firestone, George M.	St. Paul
Folsom, Bartlett L.	Littlefork
Gillam, John S.	Minneapolis
Hays, John C.	St. Paul
Hoganson, Donald E.	Bemidji
Hultgen, William J.	St. Paul
Johnson, Donald W.	Fairmont
Kantar, Bruce L.	Minneapolis
Kusske, Douglas R.	New Ulm
Levin, Louis	Rochester
Merrick, Robert L.	Minneapolis
Simmonds, Harry N.	St. Paul
Struxness, Erling B.	Belgrade
Turbak, Charles E.	Canby
Wallace, George T.	Rochester
Walstad, Paul M.	Minneapolis
Watson, Robert McL.	St. Paul

Mississippi

Lobrano, Charles M.	Centerville
Santa Cruz, Edgar W.	Gulfport

Missouri

Barnett, Julian H.	St. Louis
Boles, Clifford R.	University City
Brookreson, Alton F.	Poplar Bluff
Cross, Glen O.	St. Louis

Missouri—Continued

Doyle, Joseph P. Jr.	East Prairie
Haberer, Justin J.	St. Louis
Halperin, Phillip H.	Kansas City
Hamtil, Edward W.	St. Louis
Hibbard, Blaine Z.	Kansas City
Kromer, Charles J.	St. Louis
Lipsitz, Ellis S.	St. Louis
Loeb, Virgil Jr.	St. Louis
McFadden, James F., Jr.	Clayton
Murphy, John W., Jr.	Kirkwood
Roberts, Richard S.	Trenton
Sawhill, Fred A.	St. Louis
Simmons, Leroy	Sarcoxie
Stipp, Charles G.	St. Louis
Swenson, Alvin L.	Independence
Treharne, Frank E.	Independence
Van Ravenswaay, Arie C.	Boonville

Montana

Lewis, Rand C.	Bozeman
Rossiter, Henry D.	Sheridan

Nebraska

Aita, John A.	Omaha
Bednar, Bryce R.	Omaha
Browne, Kenneth M.	Omaha
George, John H.	Omaha
Glenn, Elmer E.	Omaha
Gogela, Louis J.	Omaha
Larson, Frank C.	Peru
Merrick, Robert B.	Alliance
Sprague, Lavern D.	Omaha
Stuart, Robert L.	Lexington
Wagner, William F.	Omaha
Watson, James W.	Grand Island
Yohe, Charles D.	Omaha

New Hampshire

Buber, Luther W.	Berlin
Matthews, Thomas V.	Concord

New Jersey

Bertland, Alexander U.	Flemington
Borsher, Irving P.	Bloomfield
Boysen, Otto T.	Egg Harbor City
Colonna, Joseph A.	West New York
Cooper, Jehu P. III	Metuchen
Cox, John R.	Mullica Hill
D'Amato, Charles R.	E. Rutherford
Day, Harold E.	Phillipsburg
Deitz, Joseph R.	Trenton
Della Penna, Samuel J.	Haskell
DePietro, Vincent P.	Union City
Dern, Samuel M.	Perth Amboy
DeTroia, Frederick C.	Newark
Einhorn, Harvey P.	Newark
Esgro, Philip	Glassboro
Gilbert, Philip D.	Camden
Goodman, Stanley J.	Jersey City
Greenfield, Sylvan J.	Newark
Harris, Morris	Bloomfield
Jurewicz, Stanley T.	Paterson
Kaplan, Samuel D.	Hillside
Krakower, Alvin H.	Paterson
Levine, Edward P.	Newark
Lioy, Anthony D.	Grantwood
Mansfield, Richard	West New York
Marcussen, Robert M.	Maplewood
Mason, Daniel	Jersey City
McCarthy, Joseph C.	Spring Lake
Midura, Peter P.	Perth Amboy
Mulliken, David K.	Leonia
Murphy, John J.	Jersey City
Nelson, Clifford H.	Irvington
Rich, Robert E.	Newark
Sandford, Francis R.	Arlington
Sasso, Albert	Belleville
Shapiro, Albert B.	Vineland
Tabankin, Alvin	Newark
Titus, Norman E.	Red Bank
Van Gorder, Charles O.	Westwood
Wein, Sidney F.	Passaic
Weinberg, Clarence R.	Newark
Whitaker, Henry J.	Pitman

PHYSICIANS SEPARATED FROM SERVICE

New Mexico

Daviet, Leslie L.	La Cruces
Keeler, Claude C.	Fort Bayard
Lane, Russell C.	Silver City
Richardson, George S.	Roswell

New York

Ackerman, Martin	New York
Azulay, Abraham	New York
Berger, Arnold L.	Bronx
Berman, Louis	Brooklyn
Bochetto, Joseph F., Jr.	Brooklyn
Bonner, William F.	Batavia
Breed, Ernest S.	Lyndonville
Brock, Henry J.	Buffalo
Brown, Charles A.	Bronx
Brown, Prescott L.	Albany
Burnett, James J.	Binghamton
Burns, Thomas A.	Syracuse
Caltabiano, Carmelo G.	Brooklyn
Campion, William F. X.	Bronx
Carreras, Miguel A.	New York
Carter, Robert E.	Jamaica
Catapano, John P.	Brooklyn
Cerasano, Ernest A.	Schenectady
Cherico, Pasquale	New York
Clark, George W.	Chazy
Colangelo, S. J.	North Collins
Cotlove, Ernest	New York
Davids, Arthur M.	New York
DeAngelis, Carmelo E.	Jackson Heights
Delterzo, Julius R.	Brooklyn
Demuth, Edwin L.	New York
DeRespinis, Benedict J.	New Dorp
DeRostaing, Caesar	Oceanside, L. I.
Dodge, Henry W. Jr.	Bronxville
Dorsey, William F.	Long Island City
Effron, Samuel A.	New York
Evans, Richard D.	Utica
Fahey, Thomas J. Jr.	Syracuse
Falussy, Anthony G.	Elmhurst
Feffer, Henry L.	Brooklyn
Feldman, Harold J.	Buffalo
Fonseca, Juan E.	New York
Forsyth, Henry H. Jr.	Rochester
Frishwasser, Edward J.	Bronx
Frost, Frank T.	Oswego
Gardner, Murray H.	Watertown
Geary, John R. Jr.	Lockport
Glasser, Seymour	Brooklyn
Glick, Benjamin W.	New York
Goldfischer, Murry	New York
Grabicki, Zygmunt P.	Schenectady
Greene, William F.	New York
Greenfield, Leigh S.	Rochester
Gregorius, Frederick J. C.	New York
Grishman, Arthur	New York
Hacker, Arthur J.	Rensselaer
Haggerty, John J.	New York
Heffernan, John A.	Rochester
Herzfeld, Melvin G.	New York
Ierardi, Peter A. Jr.	Brooklyn
Karusiatis, Vincent V.	Brooklyn
Kassander, Paul	New York
Kaufman, Irving C.	Brooklyn
Khuri, Naim N.	Binghampton
King, Samuel E.	New York
Klingon, Gerald H.	Brooklyn
Klugler, Joseph	Bronx
Kolodny, Maxwell H.	New York
Kozinn, Philip J.	Brooklyn
Leone, John A.	Niagara Falls
Levine, Daniel I.	Hempstead, L. I.
Lindsay, William W.	Freeport
Long, Frederick R. Jr.	Woodhaven
Lukash, Leslie I.	New York
Madey, Stephen L.	Buffalo
Marchetta, Frank C.	Utica
Matlin, Paul	Brooklyn
McKinstry, George C.	Webster
McMillan, George J.	Oakfield
Meyer, Albert H.	Brooklyn

New York—Continued

Meisclas, Leonard E.	Brooklyn
Meister, Edward H. Jr.	East Setauket
Micelotta, Joseph D.	Forest Hills
Miller, Howard B.	New York
Miller, Saul D.	New York
Moore, Robert J.	Albany
Moreland, Randall B.	New York
Morelli, Henry E.	Bronx
Novich, Emanuel A.	Yonkers
O'Brien, Matthew J.	Buffalo
Olmsted, Burton L.	Buffalo
O'Neil, Charles H. Jr.	Gloversville
Osher, Alexander P.	Long Island City
Petronella, Horace G.	Jackson Heights
Piccione, Gary A.	Rockville Centre
Polansky, Marvin	Albany
Posner, Leonard	Brooklyn
Pugh, David F.	New York
Rabourn, William O.	Port Byron
Radin, Samuel D.	Bronx
Rapp, Bergen A.	Hempstead
Rekers, Paul E.	Douglaston, L. I.
Robins, Edwin	Brooklyn
Romberg, George H.	White Plains
Root, Douglas L.	Albany
Rosenfeld, Daniel M.	Brooklyn
Rosmarin, Samuel	Brooklyn
Rossomando, Alfred H.	New York
Roth, Daniel	New York
Roth, Emanuel	Brooklyn
Rothman, Martin	Brooklyn
Russell, William F. Jr.	New York
Rutherford, George L.	Albany
Sauer, Paul K.	New York
Schaye, Alvin A.	New York
Schlein, William	Brooklyn
Siegel, Jacob	Bronx
Silvis, George M. Jr.	Brooklyn
Sirkin, Jacob	Newark
Solomon, Samuel	Brooklyn
Spevak, Jack	Brooklyn
Stache, Ernest G.	Astoria, L. I.
Stark, Jesse D.	New York
Steiner, Karl (Ignaz)	New York
Strade, Henry A.	New York
Strauss, Elias	New York
Sullivan, James M.	New York
Sullivan, Norbert P.	New York
Tillim, Sidney J.	Amityville
Upjohn, Richard H.	Brooklyn
Upshur, Alfred P.	New York
Van Buren, John J.	Brooklyn
Van Graafeiland, Willard W.	Rochester
Varmus, Frank	Freeport, L. I.
Warres, Herbert L.	Brooklyn
Warshaw, Arthur H.	New York
Weiner, David O.	Brooklyn
Weisberg, Howard K.	New York
Wetherell, Frederick E.	Syracuse
Weitz, Martin L.	Laurelton
Zanghetti, Gene J.	New York
Zolondek, Sol	Brooklyn

North Carolina

Barnwell, Howard B.	Edneyville
Beale, Jefferson D. Jr.	Winston-Salem
Boone, Henry	Jackson
Boyette, Dan P. Jr.	Ahoskie
Brantley, Julian T.	Greensboro
Cann, John E.	Greensboro
Codington, Herbert A., Jr.	Wilmington
Collett, James R.	Morganton
Dimmette, Robert M.	Ellerbe
Featherston, William P.	Durham
Fisher, George W. Jr.	Elizabethtown
Hubbard, Robert T.	Spray
Kester, John M.	Wilmington
Lafferty, John O.	Charlotte
McDowell, Harold C.	Cherryville
Moore, James LeG.	Raleigh
Mubarak, Jameel S.	Morresville
Noble, Baxter G.	Kinston

North Carolina—Continued

Powell, Jess A. Jr.	Edenton
Pressly, Claude L.	Statesville
Ross, Thomas W.	Charlotte
Rothman, Joseph	Bessemer City
Valk, Henry L.	Winston-Salem
Wetmore, Robert J.	Durham
Youngblood, Vernon H.	Concord

North Dakota

Brandsted, Ernest C.	Amenia
Brimi, Robert J.	Cooperstown
Donovan, Edward J.	Langdon
Hauser, William P.	Dickinson
Rothnem, Morris S.	Fargo
Mitchell, George H.	Milnor
Wood, Robert A.	Jamestown

Ohio

Adler, James S.	Amanda
Black, Louis A.	Kenton
Brogden, William E.	Canton
Brown, Delatus E.	Columbus
Brown, Edward S.	Shaker Heights
Ceraldi, Bernard A.	Cleveland
Damashek, Samuel	Dayton
Etzkorn, Peter A.	Delphos
Fishell, Richard D.	Findlay
Hendershot, Robert G.	Wingett Run
Hughes, Owen F.	Bowling Green
Hummel, George P.	Cleveland
Kelty, Richard H.	Canton
Kimerer, Neil B.	Toledo
Lemmon, James F.	Akron
Lewis, Robert N.	St. Clairsville
Manning, Thomas L., Jr.	Cleveland
Miller, Louis	Cleveland Heights
Miller, Stanley H.	Cincinnati
Mohler, George T.	Coshocton
Munns, Thomas A.	Oxford
Nilges, Richard G.	Fairview Village
Otis, John	Lakewood
Prugh, Dane G.	Dayton
Quinn, Thomas W.	Napoleon
Randt, Clark T.	Lakewood
Ross, Paul S.	Columbus
Schwinger, Aaron	Cincinnati
Segal, Abraham J.	Cleveland Heights
Somsel, Clarence P.	Dayton
Styblo, Clarence J.	Cleveland
Voskamp Ramirez, Jack	Cleveland Hgts.

Oklahoma

Bugg, Robert N.	Oklahoma City
Copeland, Evan L.	Oklahoma City
Curtis, Selvie J.	Mustang
Davis, William O.	Cushing
Forrest, Herbert J.	Tulsa
McClellan, James T.	Claremore
Neel, Roy L.	Oklahoma City
Oxley, William N.	Wilson
Rector, William L. Jr.	Ardmore
Sapper, H. V. L. Jr.	Oklahoma City
Sanders, Harold R.	Oklahoma City
Strode, Jack W.	Stillwater
Tolbert, Jack B.	Oklahoma City
Turner, Edwin C.	Oklahoma City

Oregon

Dobbin, Harold W.	Portland
Griswold, Herbert E. Jr.	Portland
Lee, George F.	Union
Molenkamp, Delmar J.	Portland
Royce, Byron F.	Salem
Skirving, John H.	The Dalles
Smith, John C.	Hood River

Pennsylvania

Auer, Edward T.	Philadelphia
Barness, Lewis A.	Warrington
Barone, Samuel F.	Pittsburgh
Bishop, Paul H. Jr.	Bethlehem
Blizard, Richard W.	Philadelphia
Blumenthal, Charles	Philadelphia

PHYSICIANS SEPARATED FROM SERVICE

Pennsylvania—Continued

Bolton, Howard A.............Aspinwall
Carideo, Louis N............Drexel Hill
Castagna, Armand..........Philadelphia
Cohen, Sheldon G...............Pittston
Dattner, Herman B.......Wilkes Barre
DeMarco, Anthony R. ....Erie
DeSantes, Frank A. ....Altoona
Dix, Robert C., Jr...........Nicholson
Donaldson, David H. Jr.....Cannonsburg
Erlichman, Irving F.........Philadelphia
Fortnum, Walter G...........Eddington
Fox, John L................Upper Darby
Gartland, John J. Jr..........Stonehurst
Gibbs, Robert L.............Barnesboro
Goracci, Armando F..........Old Forge
Gratch, Michael..............Carbondale
Hosay, John J.............Dickson City
Hough, Charles E.............Lehighton
Howanitz, Emil..............Glen Lyon
Huber, Gerard N...............Latrobe
Johnson, William S..........Philadelphia
Klimas, Enoch G. Jr.......Philadelphia
Knox, Frederick H. Jr.....Philadelphia
Kramen, Samuel V.........Philadelphia
Lepper, Norman..............Rockledge
Lipcius, Frank..................Lester
Mercurio, Frank..........Downingtown
Merriman, Wilson C.......Beaver Falls
Mervine, Thomas B..........Philadelphia
Meyers, John L..............Shillington
Miller, Edgar A.............Gettysburg
Miller, Henry N..............Reading
Miller, Richard E............Tamaqua
Mills, William L...........Philadelphia
Milstead, Laurence C.........Allentown
Mitro, William M...............Donora
Owen, John J....................Media
Parker, Andrew J............Pittsburgh
Pashuck, Eugene T.........Philadelphia
Rigby, Charles E. Jr............Folsom
Rogers, Hugh J.................Bellefonte
Roos, Leon............Juniata, Altoona
Rushmore, Charles H.....Clark's Greens
Salus, Karl..................Philadelphia
Scarpa, Harry C............Philadelphia
Schaaf, William J............Mt. Oliver
Smith, Charles M.............Pittsburgh
Sullivan, Herbert H...........Pittsburgh
Sutton, Robert C............Mifflintown
Swanson, Elmer R..............Harwick
Toland, Joseph J. III.......Philadelphia
Wagner, Henry S...............Cressona
Warshafsky, Morton........Philadelphia
Witmer, Donald B.........New Holland
Yankevitch, John J.............Freeland
Zellis, Allan................Philadelphia

Rhode Island

Bigelow, Nolton H...........Providence
Bojar, Samuel..............Providence
Gordon, Calvin M.............Providence

South Carolina

Eaddy, Albert M...............Columbia
Thomas, John D. Jr..................Loris
Thomason, James R........Fountain Inn
Weston, Christian T., Jr.....Charleston

South Dakota

Brookman, Bruce T...........Vermillion
Crowley, James H..........Rapid City
Mitchell, Charles B.............Pierre
Shaw, Millard R....................Tripp

Tennessee

Andrews, William F..........Memphis
Crane, Paul S...................Nashville
Crutcher, Richard R...........Nashville
Curtis, Lynn F.................Knoxville
Downie, Kenneth E.............Memphis
Dyer, David P................Ridgetop

Tennessee—Continued

Garrett, Sam Y..........Dixon Springs
Hall, James B.................Nashville
Hutcherson, William P.......Cookeville
(name changed from Koehn)
McFarland, T. C. Jr.......Fountain City
Miller, Fox...................Memphis
Morison, James H. S....Mountain Home
Truebger, Harold M............Nashville
Wheeler, Joseph E.............Memphis
Woods, John R.................Nashville

Texas

Adamo, Dominick C............Houston
Alston, Herbert M.............Mercedes
Battle, William D..............Dallas
Betts, Floyd G., Jr.............Wharton
Bowden, Andy J., Jr.......Weatherford
Coussons, Charles W...........Hemphill
Daily, Herschel...............Richmond
Danforth, Duncan R.........Texas City
Daniel, Dubose B.............Waskom
Daniell, Charles B...........Brownfield
Davis, James H.............Fort Worth
Dawson, William D.............Mathis
Estrada, Ramiro P..........San Antonio
Faubion, Darrell B..............Dallas
Graham, James M...........Sweetwater
Granger, Wayne H..............Dallas
Granville, George E.............Brady
Hafer, William F. L.............Clifton
Haley, Arvel E...................Dallas
Hallmark, James A.........Fort Worth
Hill, Lucius D. III........San Antonio
Jones, Edgar F. Jr.......Aransas Pass
Klingensmith, W. R., Jr.......Amarillo
Longino, Joseph B.......Sulphur Springs
McKemie, Jack F.................Bryan
McLaurin, Robert L............Dallas
Meyer, Walter B.................Hondo
Meynier, Maurice J. Jr........Houston
Murphy, Maurice...............Marshall
Nemir, Paul Jr................Navasota
Olin, Walter G. Jr.............Houston
Page, Joseph H................Houston
Perkins, Robert B..............Dallas
Rice, Lee R....................Marshall
Robison, Edward W..............Austin
Rohrer, Vern..............Springtown
Ross, Raleigh R...............Lockhart
Rothenberg, Lionel H..........Wharton
Sibley, D. Jacobi Jr.......Fort Stockton
Smith, Jack C....................Dallas
Swanson, John D. Sr...........El Paso
Taylor, Surse J. Jr...........McKinney
Velinsky, Morris.................Kilgore
Walker, James N.................Munday
Watman, Morris....................Waco
Wiesner, Jerome J...............Rowena
Wright, Thomas R.............El Paso

Utah

Deck, Melvin D....................Provo
Hall, Eugene Y.........Salt Lake City
Learned, Leland O.......Salt Lake City
Petersen, Ralph C.............Hyrum
Pond, Vaughn M..............Logan
Seavers, Ray Jr...........Salt Lake City

Vermont

Beck, Gerhard T.............Burlington
Brooks, George W............Burlington
Corley, John P...............Burlington
French, Paul K...............Burlington
Howard, Ethan V. Jr..........Burlington
Johnston, William H.......St. Johnsbury
Keenan, Thomas A.............Rutland
Moore, John F...............Fair Haven
Moskovitz, Harold...........Burlington
Pratt, George O...............Richford
Prior, Jack T..................St. Albans
Robinson, Lindsay E.........Brattleboro

Virginia

Bray, Maurice M.........Charlottesville
Brecher, George...............Arlington
Davis, James L..............Waynesboro
Davis, Thomas N. III........Lynchburg
Dillard, George H. L..........Richmond
Farragut, Loyall D...........Alexandria
Fitzgerald, Walter C.............Crewe
Frostick, Herbert W...........Richmond
Laibstain, Alter.................Norfolk
Laibstain, Herman..............Norfolk
McCall, Fred C..................Norton
Rabil, Pierre J................Roanoke
Shelburne, Robert C.......Christiansburg
Vick, Herbert W............Portsmouth
Vranian, George...............Richmond
Walker, Clifford L.............Arlington
Young, Charles G.............Roanoke

Washington

Brougham, Milton F..............Seattle
Burt, Robert R..................Tacoma
Buttorff, Douglas P.............Tacoma
Deitrich, Carlisle................Tacoma
Gunther, Noel M..................Seattle
Hanford, Russell B.............Spokane
Hauser, Max H..................Spokane
Olson, Hilding H....................Bow
Seibly, Walter W.............Clarkston
Sweet, Paul W................Centralia

West Virginia

Davis, Henry C.................Bluefield
Gray, James H................Clendenin
Jones, Ralph Jr..............Parkersburg
Kizinski, Alexander B......Parkersburg
Neely, Richard C. Jr...........Hinton
Weaver, Neill K...........Parkersburg
Wiesenfeld, Benjamin.......Huntington

Wisconsin

Bender, Roger I..............Milwaukee
Buszkiewicz, Ted S...........Milwaukee
Dametz, John H...............Muscoda
Engle, Howard A.............Milwaukee
Foseid, Oscar F..................Neenah
Galler, Fred O.................Milwaukee
Gurjian, Leon K.................Madison
Holman, James H...........Sheboygan
Kurzon, Alvin M..............Milwaukee
LaBissoniere, Paul G.........Milwaukee
Levin, Jack J..................Milwaukee
Litzow, Louis T...............Milwaukee
Lorenz, Albert A...............Viroqua
Niles, Earl W..............Whitewater
Osborne, Rollin R..............Hartford
Peterson, Leo W............Sun Prairie
Rydell, John R..................Superior
Sachs, Kurt....................Milwaukee
Smith, Gibson C................Madison
Sverdlin, Abe A...............Milwaukee
Wangeman, Clayton P..........Madison

Wyoming

Black, Norman R.............Cheyenne
Crisman, Homer R................Lander
Hoadley, Joseph E.............Cheyenne
Vonburg, Vernon R................Basin

Canal Zone

Byrd, Jessee L.................Cristobal
Ellington, Jesse C.................Ancon
Phillips, Herbert L.......Balboa Heights
Wright, George R..................Ancon

France

Rogers, Neil C........................Paris

Hawaii

Wong, Ah Yet..........................Hilo

Puerto Rico

Carrera, Manuel E.............Fajardo
Colon-Yordan, E.................Ponce
Roure, José Angel..........Quebradillas

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

COLORADO

School for Medical Record Librarians.—The University of Colorado, Boulder, will inaugurate September 1 an additional school for medical librarians which will lead to a Bachelor of Science degree from the school of business. Students will spend the first three years in the university proper and the fourth year of twelve months in the medical record library of Colorado General Hospital, Denver. The plans were drawn with the advice of the Educational Board of the American Association of Medical Record Librarians.

CONNECTICUT

Dr. Winternitz Acting Director of Research Fund.—The Jane Coffin Childs Memorial Fund for Medical Research has announced the appointment of Dr. Milton C. Winternitz, ew Haven, Conn., as acting director of the Board of Scientific dvisers to succeed Dr. Stanhope Bayne-Jones, who has accepted appointment as president of the joint administrative board of the New York Hospital-Cornell Medical Center (The Journal, June 7, p. 547). Dr. Bayne-Jones, director of the fund since its establishment June 11, 1937, will continue as a member of the Board of Scientific Advisers. The tenth anniversary of the fund was observed June 13 at a dinner in New Haven, Conn., attended by representatives of the U. S. Public Health Service, National Cancer Institute, Donner Foundation, Anna Fuller Fund, American Cancer Society, Committee on Growth of the National Research Council, Connecticut State Cancer Society and Yale University. The fund was established by gifts of $3,300,000 in trust to Yale University by the late Starling W. Childs and Miss Alice S. Coffin, New York. Dr. Bayne-Jones was the principal speaker. "The fund," he said, "has regarded the cancer problems as problems of growth and has supported work in fundamental fields of chemistry, biology, viruses, pathology, genetics and medicine." Of the eighty-one cancer projects it has supported, 78 per cent of those now in operation have been supported for three years or longer and some as long as ten years with provision up to twelve years. A fellowship program was put into operation in 1944 and twelve research fellowships have been granted. The fund is not restricted to any institution, although 40 to 60 per cent of its annual appropriations have been given to Yale. The present ratio is about evenly divided between cancer research at Yale and at other institutions in this country and abroad.

DISTRICT OF COLUMBIA

Medical Research at George Washington University.—George Washington University School of Medicine is operating this year the largest research program in its history under grants totaling $150,000. The largest grant, $40,000, is for research in anesthesia and the use of penicillin and streptomycin. Projects are under way for the study of drugs to treat typhus fever, Rocky Mountain spotted fever, rheumatic fever, tumors, arthritis and for relief of muscle spasms. Other projects deal with the study of hypertension, vitamins C and E, protein metabolism and therapy, cardiovascular disease and vascular surgery.

ILLINOIS

Federal Grant for Research in Psychology.—The University of Illinois, Urbana, has been given grants from the federal government totaling $87,850 for research and training in the field of psychology. The funds include $4,000 from the U. S. Public Health Service for fellowships and $7,250 for additional staff.

Fifty Years in Practice.—Dr. Robert W. Binney, Granite City, was given a dinner in honor of his completion of fifty years in the practice of medicine by the Tri-Cities Medical Society. Society members, classmates of Dr. Binney, representatives of industrial plants and the Chamber of Commerce of Granite City attended. The veteran doctor was presented a bronze plaque commemorating the occasion.

Chicago

Personal.—Dr. Fred L. Glenn was cited by the Kiwanis Club of Austin May 29 for unselfish service to various civic groups with which he has been actively associated.——Dr. William D. McNally, coroner's toxicologist for twenty-one years, resigned June 27.

Cook County Interns to Be Country Doctors.—A class of 58, including 4 women, began a two year internship at Cook County Hospital July 1 designed to train them as general practitioners. Dr. Karl A. Meyer, medical superintendent of the hospital, said that 99 per cent of the class when asked where they intended to practice said they would go into small communities where the need is greatest. This is the first class to enter the hospital under the new required two year internship regulation (The Journal, March 15, p. 791).

Research in Nucleonics.—Construction at the southwest corner of Ellis Avenue and 56th Street of a $1,250,000 ion accelerator building, first unit in the University of Chicago's $10,000,000 program for basic research in nucleonics, began July 9. This laboratory will house a 100 million volt betatron and two cyclotrons of the most modern construction. The first building in the proposed housing program for the Institute for Nuclear Studies, the Institute of Radiobiology and Biophysics and the Institute for the Study of Metals will be a one story structure with basement. The facilities for medical research will be used by the Institute of Radiobiology and Biophysics and the division of roentgenology of the department of medicine. One problem in prospect is a study of the effects of positive ion beams on deep-seated cancer. The accelerator building, to be ready for occupancy next spring, will make possible the resumption of advanced basic research, which has been at a standstill since the war. Among the many scientists at the university who will work in the laboratory are Samuel K. Allison, who participated in the first atomic bomb explosion in New Mexico; Enrico Fermi, Nobel prize winner, who was the first to achieve a controlled nuclear chain reaction; Harold C. Urey, discoverer of "heavy water" and Nobel prize winner; Arthur J. Dempster, discoverer of U-235; Edward Teller and Willard F. Libby, who with associates, according to the university's press release, "lately discovered radiocarbon in all living matter"; Raymond E. Zirkle, Dr. Austin M. Brues, Kenneth S. Cole and Konrad E. Bloch. Dr. Paul C. Hodges, roentgenologist, will have charge of the medical aspects of the program. The ion accelerator building will be of fireproof construction. The large cyclotron will be placed in the pit, so that its beam will be underground and not detectable by the betatron, which, together with the present cyclotron, will be enclosed in concrete walls. Five laboratories, offices for the medical staff and examining rooms for patients will be located the full length of the building. Offices, laboratories, conference room and drafting room for the Institute for Nuclear Studies and an office and laboratory for the Institute of Radiobiology and Biophysics will be located on the east balcony.

INDIANA

Appoint Assistant to Dean.—John J. Mahoney, Ph.D., formerly on the University of Illinois faculty, has been appointed assistant to the dean and assistant professor of experimental medicine at the Indiana University Medical Center, Indianapolis. Dr. Mahoney received his Ph.D. degree from the State University of Iowa, Iowa City. He has been an instructor in zoology and research associate in zoology at the State University of Iowa, Iowa City.

KANSAS

Changes in Health Officers.—The state board of health has announced the following changes in health officers: Dr. Samuel B. Muller, Pittsburg, has been appointed city health officer to replace Dr. Otto B. Kiehl. Dr. John M. Porter, Concordia, resigned as health officer of Cloud County after his appointment as a member of the Kansas State Board of Health; Dr. Frank Kinnamon, Concordia, will succeed him. Dr. Robert M. Heilman, Topeka, formerly director of the industrial hygiene division of the state health department, has returned to the Kansas State Board of Health as director of the newly created division of hospital survey and construction.

KENTUCKY

Division of Psychosomatic Medicine.—Grants totaling $49,304 for three departments of the University of Louisville School of Medicine have been received from the U. S. Public Health Service to provide funds for research and expansion of present facilities. A division of psychosomatic medicine in the school is to be organized, and two fellowships of $3,600 in that field will be offered. The grant will make possible the addition of one associate professor with special training, one society worker, one psychologist and two part time specialists. The department of anatomy received $9,960 for a study of toxemia of pregnancy in guinea pigs. In the department of pharmacology a $7,344 grant will be used to study the peptic ulcer problem.

MAINE

State Medical Election.—At the annual meeting of the Maine Medical Association at York Harbor, June 22-24, Dr. Stephen A. Cobb, Sanford, was elected president; Dr. Forrest B. Ames, Bangor, president-elect, and Dr Frederick R. Carter, Portland, secretary-treasurer.

Maine Psychiatric Society.—This society was founded at the Augusta State Hospital, June 19, for group consideration of all matters relating to psychiatry in the state. Officers elected were Dr. Carl J. Hedin, Bangor, medical superintendent, Bangor State Hospital, president; Dr. Frederick R. Carter, Portland, vice president; Dr. Francis H. Sleeper, medical director of the Augusta State Hospital, Augusta, secretary-treasurer.

MARYLAND

Gift to Johns Hopkins University.—Johns Hopkins University, Baltimore, announced on July 11 a gift of $1,000,000 from Undersecretary of State and Mrs. Will L. Clayton for medical research. The terms of the gift permit it to be used for any research regarded as most important to the department of medicine "in the present state of development of the medical sciences."

Adolf Meyer Laboratory of Neurology.—The medical advisory board of the Seton Institute and the Sisters of Charity of St. Vincent de Paul, Baltimore, have announced the gift from Dr. Adolf Meyer, Baltimore, of his entire personal collection of neuroanatomic and neuropathologic material, consisting of some sixty large boxes of serial sections from crucial human case material as well as material of a comparative nature. Included in the gift is an exhaustive card index file of neurologic subjects. The institute plans to use this material as the nucleus about which to develop a laboratory, which will be called the Adolf Meyer Laboratory of Neurology, for the study of neuroanatomy, neurophysiology and neuropathology. The material will soon be in available form for the instruction of candidates for the American board examinations in neurology. Seton Institute, the former Mount Hope Retreat, provides facilities for the training of psychiatric interns and for three years of postgraduate service required of the specialists certified by the American Board of Psychiatry and Neurology. Dr. Wendell S. Muncie, Baltimore, is chairman of the medical advisory board.

MASSACHUSETTS

Personal.—Dr. Frank H. Lahey, founder and director of the Lahey Clinic, Boston, received the honorary degree of Doctor of Science June 18 from Northwestern University, Evanston, Ill.

Lectures in Public Health.—"What's New in Public Health," a series of twelve lectures for public health workers in the North Metropolitan District of the Massachusetts Department of Public Health, has just been completed. Dr. A. Daniel Rubenstein, health officer of the district, planned the lectures to bring professional workers up to date in this field. The expenses of the course were assumed by the Middlesex Health Association, and the Harvard School of Public Health offered its facilities. Members of the Harvard School of Public Health faculty, the staff of the Massachusetts Department of Public Health and national public health experts gave the lectures to sixty-seven public health workers including board of health, school and industrial nurses, board of health agents and health educators.

Dr. Eaton Appointed Associate Professor.—Dr. Monroe D. Eaton, director of research laboratory of the state department of public health at the University of California, Berkeley, was appointed associate professor of bacteriology and immunology in Harvard Medical School, effective July 1. A graduate of Harvard Medical School, Boston, 1930, he served for three years as assistant in bacteriology and immunology in that school. From 1933 to 1936 he was an instructor in bacteriology at the Yale University School of Medicine, New Haven, Conn., and the following year was assistant professor of bacteriology and immunology in Washington University School of Medicine, St. Louis. Since 1937 he has been a member of the staff of the International Health Division of the Rockefeller Foundation and director of the research laboratory for the state of California.

MICHIGAN

Dr. Stapleton Retires.—Dr. William J. Stapleton Jr., Detroit, actively connected with teaching at the Detroit College of Medicine from 1907 and since 1914 professor of medical jurisprudence, as well as assistant, associate or acting dean since 1935, has retired. In addition to his teaching he has been engaged in active practice of medicine for forty-seven years. He received his M.D. from Michigan College of Medicine and Surgery, Detroit, in 1900, his Ph.G. from the department of pharmacy in the Detroit College of Medicine, 1902, and his LL.B. from Detroit College of Law, 1907.

Whooping Cough in Michigan.—According to Dr. William DeKleine, commissioner, Michigan Department of Health, Lansing, whooping cough, which is now appearing in the state at the rate of 200 cases a week, has taken the lives of 33 children during the first five months of this year. Eighteen of these deaths were of babies under 6 months of age. A total of 5,312 cases have been reported in the state since January 1. The Michigan Department of Health recommends that all babies at 6 months of age be given four weekly doses of vaccine, which is made by the Michigan Department of Health laboratories and distributed without charge to physicians in the state.

Course in Food Handling.—The School of Public Health, University of Michigan, gave a course on food handling from June 19 to 21 designed to serve the needs of public health workers confronted with problems of food handler education and food establishment sanitation The course was planned with the assistance of various industries such as drug stores, restaurants and hotels, and the university, the U. S. Public Health Service, Illinois state health department and the National Sanitation Foundation, the chairman of the group being Henry F. Vaughan, Dr.P.H., dean of the School of Public Health, University of Michigan. The course was attended by health workers from various parts of the United States, and three day discussions were presided over by Dr. Vaughan, Dr. Herman N. Bundesen, Chicago Board of Health, and Jerome Trichter, director of the Bureau of Food and Drugs, New York.

Rheumatic Fever Program.—Rheumatic fever, which kills five times as many children as infantile paralysis and cripples many more, is being attacked on a statewide basis in Michigan under a program set up by the committee from the state medical association. Joint sponsors of the program are the Michigan State Medical Society, Michigan Crippled Children Commission and the Michigan Society for Crippled Children and Disabled Adults, Inc. The objectives are (1) recognition and proper management of every case in Michigan, (2) determination of the incidence of the disease, (3) provision for special hospital and convalescent care centers, (4) education and continuous recourse to recent advances in research and (5) lay education and lay group cooperation. Nine rheumatic fever consultants and diagnostic centers have been established in the state and additional centers are to be set up in Muskegon, Wayne County, Battle Creek, Saginaw and Port Huron. Where the families cannot afford it, the small laboratory cost fee is paid through the Michigan Crippled Children's Commission. New cases are reported to the state health department, and monthly reports are submitted to the central office of the Michigan State Medical Society by the centers. Physicians return cases to the centers at intervals for reappraisal.

MINNESOTA

Research Professor in Rheumatic Fever.—Plans have been formulated to establish at the University of Minnesota, Minneapolis, a professorship which will direct research in heart diseases and rheumatic fever of children. The American Legion of the state of Minnesota is embarking on a campaign to secure $500,000 from its members to maintain this chair as a memorial to veterans of World Wars I and II.

Townspeople Fete Dr. Grinnell.—Hundreds of townspeople as well as patients throughout the surrounding country attended a homecoming in Preston, Minn., recently in honor of Dr. Wendell B. Grinnell, who has practiced medicine for forty-seven years. Dr. Grinnell began practicing in Fillmore County in 1900 and one year later moved to Preston. For many years he owned and operated his own hospital.

MONTANA

New Cancer Service.—The Cancer Committee of the Montana State Medical Association is inaugurating a program to provide medical service and hospital expenses for medically indigent cancer patients, interest free loans for people temporarily unable to pay, tissue examinations and outpatient care. The project has been worked out in cooperation with the state board of health and the department of public welfare, which has volunteered to do the case work. Dr. Eugene Hildebrand, Great Falls, is chairman of the state division's executive committee, which will supervise the operation of the project.

NEW YORK

Dr. Hilleboe Appointed State Health Commissioner.—Governor Dewey appointed Dr. Herman E. Hilleboe, Assistant Surgeon General of the U. S. Public Health Service, to take over the duties of the New York State Health Commissioner on July 1, succeeding Dr. Edward S. Godfrey, who has retired (THE JOURNAL, May 31, p. 472). Dr. Hilleboe graduated from the University of Minnesota Medical School in 1931 and received a Master of Public Health degree in 1935 at Johns Hopkins School of Hygiene and Public Health, Baltimore. For a time he engaged in general practice in Swanville, Minn., and since 1935 has spent full time in public health work specializing in tuberculosis control. In 1939 he was appointed senior surgeon in the regular corps of the Public Health Service. From 1939 to 1942 he was chief of the medical unit, Minnesota Division of Social Welfare, in St. Paul, on loan from the Public Health Service, and has since been in tuberculosis control work in the Public Health Service, Washington, D. C. He has been Assistant Surgeon General since Nov. 1, 1946. Dr. Hilleboe is a member of the board of directors of the National Tuberculosis Association, a member of the Council of the American Trudeau Society and of the Board of Regents of the American College of Chest Physicians and representative on the Council of the International Union Against Tuberculosis. He is professorial lecturer in tuberculosis at the George Washington University Medical School, Washington, D. C., and adjunct professor of medicine, Georgetown University, Washington. He is the American member of the Expert Committee on Tuberculosis of the World Health Organization Interim Commission.

New York City

Cancer Professorship.—Cornell University Medical College has established a professorship of cancer with an annual endowment of $15,000 for five years. The sum represents the first allocation of funds from the 1947 campaign of the New York City Committee of the American Cancer Society.

Venereal Disease Seminar for Practicing Physicians.—A new series of lectures for practicing physicians on the diagnosis, treatment and management of venereal diseases will start at the New York City Department of Health, 125 Worth Street, Manhattan, on Saturday morning, September 13. Meetings will be held every Saturday morning at 10:30 through December 20. Experts in special fields of venereal disease control will participate in the seminar. No registration or fee for the course will be required. Physicians who attend may be reached by their offices at WOrth 2-6900, extension 460.

Rehabilitation Wards Opened.—Mayor William O'Dwyer formally opened two new wards at New York's municipal Bellevue Hospital July 7, designed to provide a complete program of rehabilitation for disabled civilians similar to that available to disabled veterans through the Veterans Administration. The two wards, which will accommodate 80 patients, are claimed to comprise the first rehabilitation program in any civilian general hospital in the nation. The new program is an outgrowth of a grant of $250,000 in 1944 by the Baruch Committee on Physical Medicine to the New York University College of Medicine, which is responsible for the professional services of the new department. Dr. Howard A. Rusk, head of the department of rehabilitation and physical medicine, New York University College of Medicine, was appointed consultant in rehabilitation to the department of hospitals of the city health department. He will supervise the expansion of the program into other city hospitals. It is expected that the 80 rehabilitation beds in Bellevue will eventually be expanded to about 600 when the new Bellevue Hospital is constructed.

NORTH CAROLINA

University Promotions.—Duke University School of Medicine, Durham, has announced the promotion of Dr. Lenox D. Baker to professor of orthopedics; Dr. Jasper L. Callaway to professor of dermatology and syphilology; Dr. Robert W. Graves to professor of neurology; Dr. M. Barnes Woodhall to professor of neurosurgery; Philip Handler, Ph.D., to associate professor of biochemistry, and Dr. Jerome S. Harris to associate professor of pediatrics.

Appoint College Physician.—Dr. Cary F. Irons, Greenville, has been appointed physician at East Carolina Teachers College, Greenville, effective September 1, replacing Dr. Fredcrick P. Brooks, who has held the position since 1935. Dr. Irons received his M.D. degree at the Medical College of Virginia, Richmond. During World War II he served in the medical reserve corps and was discharged as a major. Dr. Brooks will devote full time to private practice.

SOUTH CAROLINA

Health Officer Assigned.—Dr. Carolyn H. Callison, formerly health officer for Greenwood and McCormick counties, has returned to the state board of health after receiving her Master of Public Health degree from Columbia University College of Physicians and Surgeons, New York, and has been assigned to the Charleston County Health Department. She also served four years as a county health officer in Alabama.

TEXAS

Appointed to State Board.—The appointment of the following doctors to the state board of medical examiners has been announced: Drs. McKinley H. Crabb, Forth Worth; Herschel F. Connally, Waco, and Neil D. Buie, Marlin, were reappointed. Dr. Ralph H. Peterson, Wichita Falls, will serve his first term.

New Surgical Unit.—A special surgical unit for plastic and maxillofacial surgery and neurosurgery is being developed at the University of Texas Medical Branch, Galveston, to be opened in September. This unit was planned by the late Dr. Albert O. Singleton and includes an operating suite with x-ray appliances, offices, wards and private rooms. The new unit will be under the direction of Dr. Truman G. Blocker Jr., professor of plastic and maxillofacial surgery, and Dr. Samuel R. Snodgrass, associate professor of neurosurgery.

Drs. Blattner and Brown to Head Departments.—Baylor University College of Medicine, Dallas, has announced the appointment of Dr. Russell J. Blattner, associate professor of pediatrics, Washington University School of Medicine, St. Louis, as professor and chairman of the department of pediatrics, beginning September 1. Dr. Blattner received his M.D. degree from Washington University School of Medicine, St. Louis, in 1933. He was an intern in 1934, an assistant resident in 1935 and a resident, all at St. Louis Children's Hospital. Dr. Warren T. Brown, formerly associate professor of psychiatry at Yale University School of Medicine, New Haven, on July 1 was made professor of psychiatry and chairman of the department of neuropsychiatry at Baylor University. He received his medical degree from the University of Texas Medical Branch, Galveston, in 1933 and went to Yale University School of Medicine as assistant professor of psychology and mental hygiene.

UTAH

University Appointments.—The University of Utah School of Medicine, Salt Lake City, has announced the following additions to its medical staff: Thomas F. Dougherty, Ph.D., has been appointed professor in the department of anatomy (histology). Dr. William Moretz, recently instructor in surgery at Rochester University, Rochester, N. Y., has joined the staff as assistant professor in the department of surgery, succeeding Dr. Randolph T. Shields, who has left for China. Dr. Hans Reich of the University of Basel, Basel, Switzerland, will join the staff to assist in a cancer research project now under way in the department of biochemistry, financed by grants from the Cancer Research Division of the Donner Foundation and the U. S. Public Health Service.

WASHINGTON

Reinstate Course for Medical Speakers.—King County Medical Speakers Club will present a special course consisting of ten consecutive Monday night sessions beginning September 15 and a similar series beginning Wednesday, September 17. The special course will feature speech fundamentals, how to write a speech, manuscript reading, radio technic and parliamentary law. The course, under Mr. Clayton L. Walton, state parliamentarian for the Junior Chamber of Commerce, was presented in 1941 and 1942 also. Further information may be obtained by writing the King County Medical Society, 118 Cobb Building, Seattle 1.

GENERAL

Special Society Elections.—At the annual meeting of the American Association on Mental Deficiency in St. Paul, May 27-31, Lloyd Yepson, Ph.D., Trenton, N. J., was elected president; Dr. Edward J. Humphreys, Columbus, Ohio, president-elect and editor of the journal; Dr. Neil A. Dayton, Mansfield Depot, Conn., secretary-treasurer. Final plans are outlined for the first International Congress on Mental Deficiency, which will be held in Boston at the Hotel Statler May 11-15, 1948.——At the annual meeting of the American College of Radiology in

Atlantic City June 8 Drs. Edwin C. Ernst, St. Louis, was elected president, Charles L. Martin, Dallas, Texas, vice president, Warren W. Furey, Chicago, treasurer and Mac F. Cahal, Chicago, executive secretary.

Gastroscopic Club Changes Name.—At the recent meeting of the American Gastroscopic Club in Atlantic City the name of the organization was changed to the American Gastroscopic Society. The group elected Drs. Herman J. Moersch, Rochester, Minn., president; James L. Borland, Jacksonville, Fla., vice president, and Joseph B. Kirsner, Chicago, secretary-treasurer.

Research in Multiple Sclerosis.—Contribution of $25,000, made by Mrs. Percy S. Straus, New York, has been announced by the Association for Advancement of Research on Multiple Sclerosis, Inc. With this contribution the initial goal of $100,000 for research on multiple sclerosis has been met. The first grant made by the association was for $64,350 for work in the field of allergy (The Journal, June 21, p. 722).

National League of Nursing Education.—The National League of Nursing Education will hold its fifty-first convention in Seattle September 8-11. The theme of the convention will be "Nursing Education for Public Service." The Hawaii League of Nursing Education will be formally accepted into the National League at this time. Details may be obtained from the National League of Nursing Education, 1790 Broadway, New York 19.

Dr. Kato Awarded Prize for Painting.—Dr. Hideo H. Kato, intern at the General Hospital, Louisville, Ky., won the $250 prize of the American Physicians Art Association at the exhibit held in Atlantic City in June. The painting dedicated to "combat medics" is entitled "Beyond the Call of Duty." Dr. Kato, a young Japanese American, graduate of the University of Louisville School of Medicine in 1941, served in the U. S. Army overseas twenty months. He had no previous training in art and began painting as a hobby after the war.

Publicity Campaign Against Tuberculosis.—The National Tuberculosis Association reports that the Advertising Council, Inc., will launch a nationwide publicity campaign urging periodic chest x-rays for all adults. The campaign, approved by the National Tuberculosis Association in March, will use newspapers, magazines, radio and display to drive home the necessity of early diagnosis. Space and time will be donated through the council by sponsors and advertisers who are represented in the council and whose contributions mainly support it.

The Banting Lecture.—Dr. George H. A. Clowes, Ph.D., director emeritus of the Lilly Research Laboratories, delivered the annual Banting memorial address of the American Diabetes Association at its recent meeting in Atlantic City and was awarded the Banting Medal, given in recognition of distinguished service in the field of diabetes. Under Dr. Clowe's direction the laboratories cooperated with the University of Toronto Faculty of Medicine, Ontario, and Drs. Banting and Best in the early development of insulin of sufficient purity and stability to permit its widespread clinical use throughout the world.

Scientific Attack on Problem Drinking.—The first large scale nationwide attack on problem drinking will be launched this fall by the Research Council on Problems of Alcohol. Organized ten years ago, the Research Council has been sponsoring individual research projects among scientific institutions to get at the fundamental causes of problem drinking, which affects the lives of over 750,000 persons in the United States. The primary objectives of the council are not only to learn more about these fundamental causes but to develop effective methods of treatment and prevention. It hopes to establish research diagnostic and treatment centers in leading medical schools and their affiliated hospitals. One has already been established at Cornell University Medical College–New York Hospital under a grant of $150,000 covering a five year period.

Radio Program on Rural Medical Service.—The Allis-Chalmers Manufacturing Company, West Allis, Wis., sponsors of the National Farm and Home Hour broadcast each Saturday noon over the radio facilities of the National Broadcasting Company and its independent affiliated stations, will deal with the problem of rural medical service in a special broadcast scheduled for August 2 at 12 noon, Central Standard time. Special guests on this program, representing the rural physician and his wife, will be Dr. and Mrs. Charles C. Collester of Spencer, Iowa. Arrangements for Dr. and Mrs. Collester to appear on the program were made by the Bureau of Health Education of the American Medical Association through the Iowa State Medical Society. Dr. and Mrs. Collester will travel to Chicago to broadcast from WMAQ as the special guests of the sponsors.

International Cancer Research Congress.—The fourth International Cancer Research Congress will be held in St. Louis, September 2-7, with headquarters at the Jefferson Hotel, under the sponsorship of the Union Internationale Contre le Cancer and the American Association for Cancer Research. General sessions will include presentations on the following topics:

September 3. General Aspects of Cancer Research; Cancer Surgery; Radiation Therapy of Cancer; Etiology of Cancer.
September 4. Etiology of Cancer (Carcinogens); Chemistry in Relation to Cancer.
September 5. Hormones and Cancer; Biology of Cancer.
September 6-7. Nuclear Physics in Relation to Cancer; Cancer and the Host.

Edmund V. Cowdry, Ph.D., Barnard Free Skin and Cancer Hospital, St. Louis, is president of the Congress, Dr. Shields Warren, New England Deaconess Hospital, Boston, is chairman of the Program Committee, and Dr. Axel N. Arneson, Mellinckrodt Institute of Radiology, St. Louis, is chairman of the Committee on Local Arrangements.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

	Week Ended			Total to		Total *	
Division and State	July 12, 1947	July 13, 1946	Median, 1942-1946	July 12, 1947	July 13, 1946	March 16-July 12, 1947	March 17-July 13, 1946
New England:							
Maine	0	0	1	7	3	4	3
New Hampshire	0	4	0	5	7	1	6
Vermont	0	0	0	8	7	0	3
Massachusetts	3	0	2	15	7	8	3
Rhode Island	1	0	0	7	0	6	0
Connecticut	1	4	3	9	19	6	11
Middle Atlantic:							
New York	8	15	15	97	128	61	95
New Jersey	2	6	2	22	27	16	21
Pennsylvania	7	1	3	28	33	14	21
East North Central:							
Ohio	5	13	10	33	60	23	45
Indiana	2	3	3	23	21	7	16
Illinois	9	23	6	58	102	36	94
Michigan	2	11	4	40	27	16	19
Wisconsin	0	4	1	24	20	0	7
West North Central:							
Minnesota	5	40	1	30	81	17	80
Iowa	2	8	2	20	43	12	34
Missouri	5	14	4	29	49	19	42
North Dakota	2	1	0	20	4	15	4
South Dakota	0	5	0	2	8	0	8
Nebraska	5	12	0	35	19	28	18
Kansas	0	18	5	20	55	2	51
South Atlantic:							
Delaware	0	0	0	1	1	1	1
Maryland	0	3	1	12	8	6	6
District of Columbia	0	1	1	3	2	1	1
Virginia	4	3	3	23	13	13	7
West Virginia	1	1	1	6	9	2	6
North Carolina	4	1	1	26	38	11	31
South Carolina	2	3	3	6	14	5	11
Georgia	6	2	2	24	48	17	40
Florida	3	24	2	51	338	26	289
East South Central:							
Kentucky	2	5	5	15	29	14	26
Tennessee	0	1	5	18	23	6	14
Alabama	0	14	6	23	136	10	133
Mississippi	0	6	2	22	51	5	34
West South Central:							
Arkansas	2	20	7	22	58	12	46
Louisiana	1	18	1	34	104	16	85
Oklahoma	1	15	8	21	64	10	58
Texas	6	54	45	78	391	53	363
Mountain:							
Montana	0	6	0	4	30	2	14
Idaho	2	0	0	15	1	5	1
Wyoming	2	0	0	6	2	3	1
Colorado	2	31	1	18	135	13	134
New Mexico	0	1	1	6	17	3	16
Arizona	1	1	0	12	11	9	8
Utah	1	0	0	6	13	1	7
Nevada	0	0	0	0	0	0	0
Pacific:							
Washington	3	5	2	28	63	20	30
Oregon	1	5	2	10	10	5	6
California	22	25	22	399	261	250	174
Total	125	427	...	1,421	2,590†	810	2,123
Median, 1942-1946	...	...	297	1,679			

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* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).

† Figures changed by corrected reports.

Deaths

Linda Bartels Lange, Philadelphia; Johns Hopkins University School of Medicine, Baltimore, 1911; professor of bacteriology and immunology at the Woman's Medical College of Pennsylvania from 1937 to 1940; fellow in pathology and bacteriology at the Rockefeller Institute for Medical Research, New York, from 1912 to 1914 and pathologist and director of the laboratory at the Howard A. Kelly Hospital, Baltimore, 1914-1915; instructor in pathology at the University of Wisconsin Medical School in Madison, 1915-1916, and instructor and assistant in medicine at the Johns Hopkins University School of Medicine in Baltimore from 1916 to 1919; fellow, instructor and associate in bacteriology at the Johns Hopkins University School of Hygiene and Public Health in Baltimore from 1919 to 1927, when she became associate professor, serving until 1937; died April 24, aged 65, of pneumonia.

Delbert Oscar Kearby, Indianapolis; born in Rivervale, Ind., Dec. 31, 1878; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; formerly professor of bronchoscopy and esophagoscopy at the Indiana University School of Medicine, where he had been in charge of the department; at one time served in the house of representatives of the state of Washington; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; past president of the Indiana Academy of Ophthalmology and Otolaryngology; served on the staffs of the Indianapolis City Hospital, Robert W. Long Hospital, St. Vincent's Hospital, James Whitcomb Riley Hospital for Children and the Methodist Hospital, where he died April 10, aged 68, of rupture of the abdominal aorta.

George Edward Perkins, Boston; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1913; member of the American Medical Association; served during World War I; during World War II served as a lieutenant colonel in the medical corps, Army of the United States, directing the venereal disease control program of the Sixth Army Corps and a consultant with rating boards under the Veterans Administration; acting director, division of venereal diseases, Massachusetts Department of Public Health; consultant at the Boston Dispensary and Massachusetts Memorial Hospitals; died in the Burbank Hospital, Fitchburg, April 3, aged 68, of injuries received in an automobile accident.

Joseph Johns ⊕ Ionia, Mich.; born on May 10, 1882; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1910; past president of the Ionia-Montcalm Counties Medical Society; an examiner for the draft board of Ionia County during World War II; on the staffs of the Michigan Reformatory and the Ionia State Hospital; member and past president of the staff of the Ionia County Memorial Hospital; member of the staff of the Clinton Memorial Hospital, St. Johns; visiting surgeon to St. Mary's Hospital and the Blodgett Memorial Hospital in Grand Rapids, where he died April 6, aged 64, of cerebral hemorrhage.

John Daniel Donovan, Detroit; St. Louis University School of Medicine, 1935; interned at the Providence Hospital; member of the American Medical Association, American Association of Industrial Physicians and Surgeons and the Michigan Association of Industrial Physicians and Surgeons; industrial physician for the Ford Motor Company, serving as a member of the Rouge plant industrial hospital staff and during World War II assistant physician in charge of the industrial hospital at the Willow Run bomber plant; died in the Henry Ford Hospital April 18, aged 35, of uremia secondary to sulfadiazine anuria.

John T. Harrington, Waco, Texas; Louisville (Ky.) Medical College, 1887; for many years chairman of the board of trustees and official physician at the Baylor University, where in 1945 the dormitory was named for him; served as president of the board of health of El Paso, as city physician of Waco, as supervisor of Texas penitentiaries and as director of the Epileptic Colony in Abilene; one of the founders of the Hardin-Simmons University at Abilene; on the staffs of the Providence and Hillcrest Memorial hospitals; died April 29, aged 89, of carcinoma of the prostate.

Horace Woodward Carle ⊕ St. Joseph, Mo.; Bennett Medical College, Chicago, 1914; past president of the Buchanan County Medical Society; past president and for many years a member of the school board; member of the American Heart Association and the Southern Medical Society; fellow of the American College of Physicians; formerly member and for one year president of the state board of health; affiliated with the Missouri Methodist Hospital and St. Joseph's Hospital; died April 27, aged 57, of pulmonary embolism, chronic heart disease and pneumonia.

Joseph Vincent S. Dauksys, Beacon, N. Y.; Rush Medical College, Chicago, 1926; member of the American Medical Association, Radiological Society of North America and the American College of Radiology; at one time secretary-treasurer of the Mercer County (Ill.) Medical Society; for many years affiliated with Veterans Administration hospitals at various places; major in the medical corps, Army of the United States, during World War II assigned to the Veterans Administration Hospital in Castle Point; died April 6, aged 47, of pulmonary tuberculosis.

William Dietrich Aufderheide ⊕ St. Louis; Marion-Sims College of Medicine, St. Louis, 1898; also a graduate in pharmacy; on the staffs of the Alexian Brothers Hospital, Deaconess Hospital and the Lutheran Hospital, where he died April 16, aged 71, of cerebral hemorrhage and hypertension.

Joseph E. Benton, Central City, Neb.; Omaha Medical College, 1897; member of the American Medical Association; on the staffs of St. Francis Hospital in Grand Island and the Hord Memorial Hospital; surgeon for the Union Pacific and Burlington railroads; died in St. Joseph's Hospital in Omaha April 22, aged 71, of carcinoma of the cecum with metastases to the liver.

Thomas Franklin Beveridge ⊕ Muscatine, Iowa; Kentucky School of Medicine, Louisville, 1891; affiliated with the Benjamin Hershey Memorial Hospital, where he died April 22, aged 80, of coronary occlusion.

Charles David Bles, New York; Fordham University School of Medicine, New York, 1911; served as medical officer with the 102d Engineers of the New York National Guard, on the Mexican border and during World War I; died in Veterans Administration Hospital number 81, March 5, aged 68.

John A. Boyd ⊕ Santa Barbara, Calif.; Western Pennsylvania Medical College, Pittsburgh, 1903; died April 9, aged 69, of coronary occlusion.

John Francis Boyle ⊕ Lowell, Mass.; Harvard Medical School, Boston, 1903; member of the New England Obstetrical and Gynecological Society; past president of the Middlesex North Medical Association; on the staff of St. Joseph's Hospital; died April 25, aged 75, of arteriosclerotic heart disease.

Thomas L. Bradley, Warrensburg, Mo.; Washington University School of Medicine, St. Louis, 1896; county jail physician; served as county coroner; died April 10, aged 76, of arteriosclerosis.

Frank Erwin Brinckerhoff ⊕ Beloit, Wis.; University of Illinois College of Medicine, Chicago, 1913; fellow of the American College of Surgeons; served during World War I; on the staff of the Beloit Municipal Hospital; died in St. Petersburg, Fla., April 19, aged 56, of coronary occlusion.

Frank Elbert Burbank ⊕ Oxford, Iowa; State University of Iowa College of Medicine, Iowa City, 1892; died in the Community Hospital, Pleasantville, April 19, aged 90, of cerebral hemorrhage.

Sidney Raymond Carsley ⊕ Palmer, Mass.; University of Vermont College of Medicine, Burlington, 1902; medical examiner for Hampden District; affiliated with the Wing Memorial Hospital in Palmer, Mary Lane Hospital in Ware and the Springfield Hospital in Springfield, where he died April 19, aged 71, of coronary thrombosis.

Levi Bennett Cochran ⊕ Hartford, Conn.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; served on the staff of the Hartford Hospital, where he died April 21, aged 79, of coronary sclerosis with infarction.

Morris Coplan ⊕ Cleveland; University of Wooster Medical Department, Cleveland, 1897; member of the Cleveland Academy of Medicine; served on the staff of the Mount Sinai Hospital; on the staffs of the Lutheran Hospital and the Fairview Park Hospital, where he died April 3, aged 73, of coronary thrombosis.

Herbert Richard Crase, Los Angeles; Stanford University School of Medicine, San Francisco, 1927; member of the American Medical Association; on the staffs of the California Lutheran Hospital and the Queen of Angels Hospital, where he died February 21, aged 45, of hypertension and uremia.

Ira Alexander Dailey, Micanopy, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; member of the American Medical Association; affiliated with the Alachua County Hospital; died in Gainesville April 14, aged 56, of carcinoma of the bladder.

Lawrence Leroy Davidson ⊕ Santa Monica, Calif.; University of Nebraska College of Medicine, Omaha, 1926; on the staffs of the Santa Monica and St. John's hospitals; died in Los Angeles April 21, aged 45, of arteriosclerosis and coronary occlusion.

Samuel H. Dillard, Brookhaven, Ga.; Atlanta Medical College, 1883; died March 16, aged 86, of uremia.

William James Donahue ⊕ Newark, N. J.; Long Island College Hospital, Brooklyn, 1909; member of the American Psychiatric Association; served during World War I; received a certificate of appreciation from the War Department for service on the Induction Examining Board in the New Jersey-Delaware Recruiting and Induction District during World War II; on the staffs of the City Hospital, St. Michael's Hospital and Presbyterian Hospital, where he died April 18, aged 63, of carcinoma of the left lung.

Robert P. Donaldson, Pontotoc, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; member of the American Medical Association; for many years county health officer; member of the Selective Service Board during World War II; for many years vice president of the Bank of Pontotoc; died in the Community Hospital, Tupelo, April 30, aged 70, of injuries received in an automobile accident.

Roswell Thomas Eldon, Altoona, Pa.; Jefferson Medical College of Philadelphia, 1891; member of the American Medical Association; served on the staffs of the Mercy and Altoona hospitals; died April 12, aged 79, of coronary thrombosis.

Ord Everman, Indianapolis; Indiana University School of Medicine, Indianapolis, 1908; served during World War I; psychiatrist for the Veterans Bureau and had been stationed at hospitals in various parts of the country; died April 21, aged 71, of coronary occlusion.

Edward Hilts Ewing, Stoughton, Mass.; College of Physicians and Surgeons, Baltimore, 1897; member of the American Medical Association; served during World War I; associate medical examiner for the Norfolk County fifth district; formerly a member of the school committee in Stoughton; died March 8, aged 74.

LeRoy Ellis Fosner ⊕ Evanston, Wyo.; Maryland Medical College, Baltimore, 1911; secretary of the Uinta County Medical Society; served as mayor, county health officer and county physician; died April 21, aged 61, of cerebral hemorrhage.

Edward Frank Freedman, Cleveland; Western Reserve University School of Medicine, Cleveland, 1913; specialist certified by the American Board of Radiology; member of the Radiological Society of North America; affiliated with the Mount Sinai Hospital, where he died April 16, aged 59, of coronary thrombosis.

Frederick Joseph Garlick ⊕ Rochester, N. Y.; Albany Medical College, 1911; member of the American Urological Association; served overseas during World War I; consultant, Rochester State Hospital; served on the staff of the Monroe County Hospital; chief urologist, Park Avenue Hospital and the Rochester General Hospital, where he died April 22, aged 59, of arteriosclerotic heart disease.

Coleman P. Gay, Geneva, Ala.; Southern Medical College, Atlanta, 1897; member of the American Medical Association; past president of the Geneva County Medical Society; killed April 19, aged 73, when his automobile collided with a truck.

Lemuel B. Gilbert, McMinnville, Tenn.; Chattanooga (Tenn.) Medical College, 1903; died in the Rutherford Hospital, Murfreesboro, April 11, aged 72, of leukemia.

Herman Gliboff, Rockaway Beach, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1919; member of the American Medical Association; school physician; on the staffs of the St. Joseph Hospital in Far Rockaway and the Rockaway Beach Hospital; died in the New York Hospital April 13, aged 53, of carcinoma of the pancreas.

Rush Clayton Godfrey, Lancaster, Wis.; University of Pennsylvania School of Medicine, Philadelphia, 1912; member of the American Medical Association; past president of the Grant County Medical Society; served during World War I; physician in charge of the Grant County Asylum and medical director of the Lancaster General Hospital; died April 14, aged 61, of chronic myocarditis and arteriosclerosis.

Frank Goldenberg, Cincinnati; University of Cincinnati College of Medicine, 1914; on the staff of the Jewish Hospital; died April 16, aged 60, of coronary thrombosis.

Bernhard Alexander Goldmann ⊕ Pittsburgh; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1922; assistant professor of dermatology at the University of Pittsburgh School of Medicine; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; on the staffs of the Woman's Hospital and the Presbyterian Hospital, where he died April 7, aged 51, of coronary disease.

William T. Griggs, Poplar Branch, N. C.; University of Virginia Department of Medicine, Charlottesville, 1896; member of the American Medical Association; served as assistant surgeon in the U. S. Public Health Service; died April 9, aged 80, of arteriosclerosis and heart disease.

August Groman, Odebolt, Iowa; Chicago Homeopathic Medical College, 1878; member of the American Medical Association; died April 22, aged 90, of angina pectoris.

Malcolm C. Guthrie ⊕ Kingston, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; formerly on the consultant staff of the Wilkes-Barre (Pa.) General Hospital; died April 14, aged 65, of heart disease.

John Franklin Habermel ⊕ New Albany, Ind.; University of Louisville School of Medicine, 1928; fellow of the American College of Surgeons; member of the staff of St. Edward's Hospital; died in St. Joseph's Infirmary, Louisville, April 4, aged 47, of acute bacterial endocarditis.

Chris Richard Halloran ⊕ Los Angeles; University of Texas School of Medicine, Galveston, 1923; member of the American Academy of Dermatology and Syphilology; for many years secretary of the Los Angeles Dermatological Society; died March 8, aged 50.

Robert Samuel Harwood ⊕ Los Angeles; Chicago College of Medicine and Surgery, 1915; died in March, aged 58.

Forest Jacob Isenberger, Gypsum, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1908; died in Topeka March 25, aged 78, of cerebral hemorrhage.

Lewis Turner Jackson, Tulsa, Okla.; St. Louis College of Physicians and Surgeons, 1906; died March 31, aged 69, of influenza.

George Howard Jantzen ⊕ Queens Village, N. Y.; Fordham University School of Medicine, New York, 1920; examining physician for St. Anne Council, Knights of Columbus; on the staffs of the Queens General Hospital, Jamaica Hospital and the Mary Immaculate Hospital in Jamaica, where he died April 2, aged 51, of nephritis.

Frederick Henry Johanboeke, Louisville, Ky.; University of Louisville Medical Department, 1896; also a graduate in pharmacy; member of the American Medical Association; died in the Kentucky Baptist Hospital April 4, aged 86, of arteriosclerosis and chronic lymphatic leukemia.

Edward Samuel Johnston, Cincinnati; Cincinnati College of Medicine and Surgery, 1898; died April 20, aged 79, of acute congestive heart failure.

Frank Benedict Keleher, Brooklyn; Long Island College Hospital, Brooklyn, 1895; affiliated with St. Mary's Hospital, where he died April 18, aged 73, of perforated duodenal ulcer and general peritonitis.

Clarence Fay Kercheval, Clinton, Ind.; Illinois Medical College, Chicago, 1898; died April 2, aged 74, of chronic emphysema.

George Morris Kersey, Atlanta, Ga.; Meharry Medical College, Nashville, Tenn., 1940; interned at the Freedmen's Hospital in Washington, D. C.; served a residency at the Trinity Hospital in Detroit; a captain in the medical corps, Army of the United States, during World War II, serving as an associate medical officer at the Veterans Administration Facility in Tuskegee, Ala.; died April 16, aged 34, of dissecting aneurysm of the aorta.

Robert Kettner, Denver; University of Nashville (Tenn.) Medical Department, 1890; also a dentist; died in Albuquerque, N. M., March 1, aged 86, of cerebral hemorrhage.

Drue King, Tuskegee, Ala.; Tufts College Medical School, Boston, 1914; for many years affiliated with the Veterans Administration Hospital, where he died April 20, aged 60, of cerebral hemorrhage.

Russell Henry King, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1904; served during World War I; affiliated with the St. John's General Hospital; died April 24, aged 68, of coronary thrombosis.

Harold William Klewer, Toledo, Ohio; University of Cincinnati College of Medicine, 1935; member of the American Medical Association; interned at the Lucas County General Hospital; served in the medical corps of the U. S. Naval Reserve during World War II; on the staffs of the Maumee Valley Hospital, Toledo Hospital and the Mercy Hospital, where he died April 17, aged 40, of uremia.

Boyden Waclaw Kowalski ⊕ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1928; honorary deputy sheriff of Ocean County, N. J., died April 9, aged 43, of carcinoma of the bronchus.

Frank George Kreft, Toledo, Ohio; University of Cincinnati College of Medicine, 1915; for many years county coroner; served during World War I; on the staff of St. Vincent's Hospital, where he died April 9, aged 56, of subarachnoid hemorrhage.

James Wesley Krichbaum, Montclair, N. J.; the Hahnemann Medical College and Hospital, Chicago, 1891; served on the faculty of the New York Homeopathic Medical College and Flower Hospital in New York; formerly on the staff of the Montclair Community Hospital; died April 22, aged 85, of cardiac decompensation and arteriosclerosis.

Charles Edward Lambert, New York; Bellevue Hospital Medical College, New York, 1893; died in St. Luke's Hospital April 6, aged 80, of arteriosclerosis and pneumonia.

Jennie Theodate Miner Lane, Worcester, Mass.; Boston University School of Medicine, 1896; died April 9, aged 86, of cerebral arteriosclerosis.

Damon Smith Latimer, Union City, Tenn.; University of Tennessee College of Medicine, Memphis, 1917; member of the American Medical Association; formerly secretary of the Obion County Medical Society; died in the Baptist Hospital, Memphis, April 26, aged 52, of cerebral hemorrhage.

William George List, Cincinnati; Medical College of Ohio, Cincinnati, 1896; member of the American Medical Association; at one time on the faculty of his alma mater; on the courtesy staff of the Jewish Hospital, where he died April 4, aged 71, of influenzal meningitis.

Philip Coe McDowell ⊕ Wooster, Ohio; Western Reserve University School of Medicine, Cleveland, 1918; fellow of the American College of Surgeons; formerly in charge of the American Presbyterian Mission, Tehran Hospital, Tehran, Iran; died April 10, aged 55, of coronary thrombosis.

William Peter Martin ⊕ South Orange, N. J.; Baltimore University School of Medicine, 1902; died in the Hospital of St. Barnabas in Newark April 2, aged 77, of chronic glomerulonephritis, diabetes mellitus and uremia.

Emery Allen Paschal, St. Charles, Ill.; Rush Medical College, Chicago, 1879; died in the Delnor Hospital April 2, aged 90, of pneumonia.

Frances L. Patrick, Chicago; Northwestern University Woman's Medical School, Chicago, 1894; died April 12, aged 86, of chronic myocarditis.

Theodora Garthwaite Tucker Peck, Elizabeth, N. J.; New York Medical College and Hospital for Women, Homeopathic, New York, 1900; died in the Richmond Memorial Hospital in Staten Island April 4, aged 69, of arteriosclerotic heart disease and pulmonary infarction.

Alexander C. Peska ⊕ Chicago; Loyola University School of Medicine, Chicago, 1922; on the staff of the Lutheran Deaconess Hospital; died April 9, aged 58, of coronary occlusion.

Stephen J. Podlewski, Steubenville, Ohio; Baltimore Medical College, 1895; member of the American Medical Association; vice president of the Peoples National Bank; for many years surgeon for the Pennsylvania Railroad Company; on the staff of the Gill Memorial and Ohio Valley hospitals; died April 8, aged 74, of heart disease.

Adolf Hans Potthast ⊕ Weimar, Texas; University of Texas School of Medicine, Galveston, 1915; physician for the Selective Service during World War I and II; served as city health officer; died in the Medical and Surgical Memorial Hospital in San Antonio, April 24, aged 57, of a malignant tumor.

Dominic Antonio Puleo, New York; Georgetown University School of Medicine, Washington, D. C., 1920; member of the American Medical Association; died April 19, aged 54.

Frederick Carver Robbins, Canandaigua, N. Y.; Boston University School of Medicine, 1896; member of the American Medical Association and the American Psychiatric Association; served during World War I; lieutenant colonel, medical reserve corps, not on active duty; at one time affiliated with the Cornell University in Ithaca; served on the staffs of Veterans Administration facilities in various places; on the staff of the Brigham Hall Hospital; died in Tampa, Fla., April 16, aged 73, of coronary occlusion.

W. Arch Robinson, Sturgeon, Mo.; Barnes Medical College, St. Louis, 1898; member of the American Medical Association; died April 10, aged 71, of myocarditis.

William Campbell Roland, Indianapolis; Kentucky School of Medicine, Louisville, 1893, veteran of the Spanish-American War and World War I; died in Fort Harrison, Ind., March 2, aged 78, of cerebral thrombosis and arteriosclerosis.

Edward Gould Rowland, Trenton, N. J.; Baltimore Medical College, 1903; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association; served on the staffs of the Norwich State Hospital in Norwich, Conn., Madison State Hospital in North Madison, Ind., and the New Jersey State Hospital; died in Philadelphia April 9, aged 68, of lymphosarcoma.

Abigail A. Shortess Ruston, Evansville, Ind.; Physio-Medical College of Indiana, Indianapolis, 1900; died April 28, aged 77, of hypertensive heart disease and hypostatic pneumonia.

Walter R. Shannon ⊕ Milford, Pa.; Baltimore University School of Medicine, 1897; past president of the Wayne-Pike Counties Medical Society; county medical director; examining physician for the county Selective Service during World War II; on the courtesy staff of St. Francis Hospital in Port Jervis, N. Y.; at one time surgeon for the Erie Railroad and a member of the state legislature; died in Allentown April 7, aged 71, of coronary occlusion.

William Henry Shields, Ellwood City, Pa.; Medico-Chirurgical College of Philadelphia, 1893; on the staff of the Ellwood City Hospital; died in the Shadyside Hospital in Pittsburgh April 24, aged 78, of coronary occlusion, hypertension and cerebral hemorrhage.

Mayer Shoyer, Holton, Kan.; University Medical College of Kansas City, Mo., 1897; member of the American Medical Association; county health officer; affiliated with St. Francis Hospital in Topeka; died April 5, aged 71, of sarcoma of the liver.

Elijah W. Smith, Benton Harbor, Mich.; Indiana Eclectic Medical College, Indianapolis, 1890; Barnes Medical College, St. Louis, 1893; formerly associated with the Indian Service; died March 30, aged 89, of pneumonia.

Carlos C. Stevens ⊕ Blytheville, Ark.; University of Georgia Medical Department, Augusta, 1902; on the staff of the Blytheville City Hospital, where he died March 23, aged 68, of heart disease.

Jesse Oldham Strother ⊕ Henderson, Ky.; Kentucky University Medical Department, Louisville, 1905; on the staff of the Deaconess Hospital in Evansville, Ind.; member and past president of the staff of the Henderson Hospital, where he died April 21, aged 65, of coronary thrombosis.

Reginald James Henry Stroud ⊕ Tempe, Ariz.; University of Colorado School of Medicine, Denver, 1912; served as secretary and state superintendent of public health; member of the House of Delegates of the American Medical Association from 1919 to 1930; formerly affiliated with the Indian Service; past president of the Maricopa County Medical Society and the Cochise County Medical Society; commissioner for the Amateur Athletic Union; formerly affiliated with the Cochise County Hospital at Douglas; served on the staffs of the Southside District Hospital in Mesa, St. Joseph Hospital and Good Samaritan Hospital in Phoenix, where he died April 4, aged 60, of cholelithiasis, hepatitis and diabetes mellitus.

Anna E. Daniels Trimble, Middleport, Ohio; Cincinnati College of Medicine and Surgery, 1896; died March 12, aged 78, of cerebral embolism.

Thomas Francis Welch, Washington, D. C.; Georgetown University School of Medicine, Washington, 1922; interned at the Central Dispensary and Emergency Hospital; died in Towson, Md., April 5, aged 48, of pulmonary tuberculosis.

Frank Moore Whiting, Oroville, Calif.; Cooper Medical College, San Francisco, 1906; served during World War I; deputy county health officer; died April 26, aged 71, of carcinoma.

Creed Scott Wilkins, Abbeville, Miss.; Memphis (Tenn.) Hospital Medical College, 1911; director of the First National Bank of Oxford; died March 16, aged 59, of heart disease.

James Edgar Wilson, Lancaster, Texas; University of Texas School of Medicine, Galveston, 1896; at one time assistant health officer of Dallas; served during World War I; during World War II examining physician for the local draft board; served on the local school board; died March 8, aged 73, of coronary occlusion.

William Francis Wood, Bedford, Va.; College of Physicians and Surgeons, Baltimore, 1893; died April 19, aged 84, of myocarditis.

Daniel Yellin, San Francisco; University of California Medical School, San Francisco, 1939; member of the American Medical Association; affiliated with the Mount Zion Hospital, where he died March 5, aged 32, of lupus erythematosus.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 14, 1947.

First Step in Organizing the National Health Service

The National Health Service is now law, but the organization of a medical service for every person, which includes every form of treatment, general practitioner, consultant and hospital, is a gigantic task which has only begun. As a first step the executive councils regulations have been laid before Parliament by the minister of health. The act envisages the setting up of executive councils in each county and county borough to organize the family practitioner services locally. The regulations deal with arrangements for appointing members, terms of office, and general procedure. Half the membership of the councils is to be professional and appointed by the medical profession itself, and half is to be appointed by the local health authorities and the minister. The regulations provide for the annual retirement of one third of the members and thus set up the normal term of office as three years. Most of the appointments to the first executive councils have already been made by the local authorities and the local medical organizations, and the minister of health is now considering what appointments he will make.

The executive councils will not only have to begin planning the services for which they will themselves be responsible but they will also have to give any advice or help sought by bodies responsible for organizing other parts of the service, such as local health authorities and the regional hospital boards. The regulations also provide for the appointment by these councils of ophthalmic services committees which will organize the local supplementary eye service, which is to be provided by physicians with prescribed qualifications and by ophthalmic and dispensing opticians. It is hoped that the health service will come into operation next April.

Poisoning by Dried Egg

During the war the importation of spray dried egg was a valuable means of economizing shipping space. But a number of cases of poisoning due to Salmonella organisms occurred. This has led the Medical Research Council to make an investigation, the result of which is published in a pamphlet entitled "The Bacteriology of Spray Dried Egg, with Special Reference to Food Poisoning." Examination of 7,584 samples of dried egg showed the presence of Salmonella organisms in 9.9 per cent. In 1944 the number of known outbreaks of food poisoning due to Salmonella reached the unprecedented total of 454, a figure greater than that for seventeen years preceding the war.

Between 1942 and the end of 1945, 244,000 tons of dried eggs were imported from the United States, Canada and the Argentine. Though the risk of food poisoning was apparent, consumption continued because of the high value as a concentrated foodstuff. Dishes of dried eggs were prepared in the experimental kitchen of the Ministry of Food and tested at the bacteriologic laboratory at Cambridge. It was proved that dried egg was safe to eat if cooked soon after reconstitution, even by such a relatively mild heat treatment as scrambling. Recipes for custard sauces prepared without boiling and milk and egg shakes were rejected.

Gift for Repair of the Royal College of Surgeons

A gift of $40,000 from the American College of Surgeons has been received by the president of the Royal College of Surgeons as a contribution to the fund for the restoration of the Royal College so extensively damaged in 1941 by German bombs. This gift brings the total so far received to $700,000 toward the $1,000,000 required. The American College is also giving a desk and lantern for the lecture theater of the Royal College.

To Reintroduce Bill to Legalize Euthanasia

The Voluntary Euthanasia Society, which introduced a bill in the House of Lords to legalize euthanasia for patients suffering intolerable pain from incurable disease, has held its annual meeting. The bill was presented in 1936 but failed to secure a second reading. At the meeting Dr. E. A. Barton, who had retired after forty years' practice in London, said that doctors who acceded to a patient's appeal for release took a risk. Though cases needing euthanasia are rare—he had seen only half a dozen in fifty years—they were peremptory. He hoped that many would be willing to risk criticism and worse by doing for the patient what they would wish to be done for themselves in similar circumstances. The society proposes to reintroduce the bill. It is suggested that England should be divided into areas, in each of which two doctors of high standing should be appointed who could be called on by the general practitioner to carry out the final act. The patient would have to ask for the relief, but only urgent pleas would be considered. The consent of the friends would not be asked, for, if refused, the patient must continue to suffer, and if it was given, misunderstandings might arise later. Though euthanasia is not legal, the authorities do not seem disposed to take any action in the cases in which relief has been given.

Sir Almroth Wright

The death of Sir Almroth Wright at the age of 85 has removed from medicine a great and unique figure. The son of an Irish father and Swedish mother, he was educated at Trinity College, Dublin, where he graduated B.A. in 1882 and won the gold medal in modern literature. He had already taken up medicine, in which he graduated in 1883. His pioneer work on immunization began in 1896. Inspired by Haffkine's inoculation of cases of cholera and Pfeiffer's inoculation of 2 cases of typhoid, Wright introduced the idea of immunization by vaccines made of killed bacteria. Pasteur had obtained results by inoculation of living but attenuated cultures. Wright, however, thought that inoculation of living microbes to produce immunity in man would not be practicable on a large scale. He therefore perfected the technic of inoculation of killed typhoid cultures and showed that they would protect against the disease. He then came up against the opposition of the army authorities, whose conservatism could not stomach the novel idea of introducing microbes, dead or alive, into the human body. So powerful was the opposition that he had to resign his army post. However, a supply of his vaccine was dispatched with the troops sent to South Africa to fight the Boers. There, as in other campaigns, typhoid was rife, owing to insanitary conditions in a dusty climate, which led to a plague of flies as carriers. The results were most satisfactory. Wright was able to show that at Ladysmith only 2 per cent of 1,705 men who had been inoculated contracted typhoid, while 13.2 per cent of those not inoculated did. A similar result was obtained in troops stationed in India. The result was that the War Office adopted typhoid inoculation as a routine procedure.

In 1902 Wright obtained his most important appointment, which he held nearly to the end of his life—pathologist to St. Mary's Hospital, London. Under his direction a special department was created, the Department of Therapeutic inoculation, which afterward became the Institute of Pathology and Research. The institute provided sufficient antityphoid vaccine for 4½ million men. His work centered on the possibility of controlling bacterial diseases already in progress by inoculation of killed cultures (vaccines). He was not content to measure the results clinically. He examined the patient's blood for indications that the body had responded by the production of protective substances. This led to new technical procedures for the measurement of phagocytosis and bactericidal power, which he embodied in a book published in 1912 entitled "Technique of the Teat and the Capillary Glass Tube." It was an important first step in the application of micro-technic to bacteriology.

Sir Frederick Gowland Hopkins

The death of Sir Frederick Gowland Hopkins in his eighty-sixth year has removed the man who played the greatest part in the creation of the science of biochemistry. He is most widely known as the discoverer of the vitamins, but his other fundamental research included the part played by lactic acid in muscle activity, the discovery of the amino acid tryptophan and its "specific biologic value," and the isolation of the cell catalyst glutathione. His scientific life began with the study of chemistry. The government analyst and medical jurist Sir Thomas Stevenson appointed Hopkins his assistant. He showed great skill in the isolation and identification of poisons in famous criminal cases. He next studied medicine and qualified but never practiced. His chemical training directed him toward pathologic research. In 1896 he was largely instrumental in the founding of the Clinical Research Association, an entirely new kind of undertaking which examined pathologic specimens for physicians and reported on them. Toward the close of the century came a turning point in his career. He attracted the notice of the physiologist Sir Michael Foster, who occupied the chair at Cambridge and invited Hopkins to go there and develop teaching and research in the chemical side of physiology. He was appointed lecturer in chemical physiology and had not been long at Cambridge when, in 1901, he made his first great discovery. In collaboration with S. W. Cole he isolated the amino acid tryptophan. In 1914 a professorship in biochemistry was created for him. In his later years he took an active part in the direction of scientific research. He was an original member of the Medical Research Council. In 1931 he was elected president of the Royal Society, the highest scientific position in this country. Under him the Cambridge School of Biochemistry became famous for investigations into the chemistry of life. Visitors came to his laboratory from all over the globe and went away impressed by the man and his work.

PARIS

(From Our Regular Correspondent)

July 6, 1947.

Poliomyelitis in France

The following figures show that poliomyelitis has lately attained importance among infectious diseases in France:

Year	Months	Number of Cases
1943	June to November	1,800
1944	June to November	366
1945	June to November	780
1946	June to November	1,342

Two small epidemics are to be noted during the years 1943 and 1946. In the period from the 1st of January to the 1st of May 1947, 182 cases have been recorded, and the Bulletin of Epidemiologic Information of the Ministry for Public Health states that "these figures surpass the average and remain close to the maximum of cases noted in the course of ten years."

The 1943 Epidemic

This epidemic began at Montluçon and had two foci, one in the Allier and Haute-Garonne departments, the other in the Meurthe-and-Moselle department. Its chief characteristics were that (1) in addition to 1 to 6 year old children a number of adults and adolescents were stricken, (2) cases with early meningeal symptoms were rare and (3) the paraplegic and monoplegic forms were prevalent (65 per cent). The mortality rate was 10.5 per cent.

The 1946 Epidemic

This epidemic produced 51 cases in June, 155 cases in July, 335 cases in August, 376 cases in September, 278 cases in October and 127 cases in November. It had one focus in the department of Maine-et-Loire and, generally speaking, in the regions bordering on the Loire River, between Saumur and Angers, and another focus in the Côte d'Or, in the Beaune district. As in 1943, the epidemic did not affect Paris. All cases reported for Paris have been sporadic or those of adults and children, who appear to have contracted the disease in the other infected areas or who had been in contact with infected persons and came back to Paris during the incubation period. While the river Seine cannot be considered as a source of contagion, nevertheless the prohibition of bathing in rivers was one of the first prophylactic measures taken. The epidemic was characterized by the existence of typical paralytic cases, but there were also atypical cases with meningeal or encephalic syndromes. Paralleling this poliomyelitis epidemic, encephalitis was noted in horses, as well as other epidemics in chickens. All efforts, including laboratory studies of those animal diseases, made with a view of discovering the origin of poliomyelitis, have given no result.

At several meetings of the National Academy of Medicine, Debré, Lemierre and Levaditi discussed the means of transmission of poliomyelitis. Debré and Lemierre voiced doubts regarding its propagation by the enteral route, but Levaditi upheld this theory. In discussing respiratory failure in poliomyelitis, Debré emphasized that, in the case of serious paralysis of the respiratory muscles, the prognosis does not improve as a result of artificial respiration provided in the steel lung.

Sanitary Condition in the Overseas Territories

A special meeting April 29 of the National Academy of Medicine, under the presidency of Mr. Jolly, was devoted to exotic pathology. General A. Sice, inspector of colonial troops, presented a survey of the present health condition of French overseas territories. Thanks to the efforts of the Service of General Hygiene, improvement in the cultivation of foodstuffs has taken place. A stubborn fight against the state of underfeeding of the population has increased the resistance of the people against infections by restoring alimentary equilibrium. As a consequence a decrease in epidemics, once murderous, has been recorded. Smallpox has been kept in check everywhere. In 1943 a local epidemic brought by nomads made its appearance at Fort Lamy; the situation was straightened out after 626,873 smallpox vaccinations and 78,921 associated vaccinations with a vaccine produced in the vaccination center of Fort Lamy, under control of the Brazzaville Pasteur Institute, had been effected. Human trypanosomiasis, which formerly destroyed the population of entire villages, is regressing. In French West Africa, out of 4,500,000 inhabitants examined, 300,000 were found ill and treated. In French Equatorial Africa, out of a population of 3,800,000 inhabitants, 1,472,700 were examined, among whom 7,600 were found ill. Paludism, especially in Madagascar and in La Réunion Island, is not yet checked. In 1945 Madagascar alone had 777,000 cases. Leprosy is progressing, on account of the lack of hygiene, in the zones where the disease is endemic. Plague is regressing and the number of cases, which was 681 in 1939, was 184 in 1945; 3,000,000 vaccinations were performed with the living vaccine prepared by Girard at the Tananarive Pasteur Institute.

Yellow fever is also decreasing. In West Africa, 23 cases were recorded in 1941; there were only 2 in 1944. Since 1941, in Free French Africa, anti-yellow fever vaccination has been declared compulsory. The number of persons subjected to vaccination increased from 8,000,000 in 1941 to 15,000,000 in 1945. Syphilis still exerts its nefarious influence on infantile mortality. As to the experimental work of the branches of the Pasteur Institute, especially to be noted is the importance of a polyvalent anti-snake bite serum of the Brazzaville Pasteur Institute. This is very effective against the venoms of Naja melanoleuka and of Dendropsis jameson. A permanent commission for anthropologic studies of the aborigines of Africa has been created to study their migrations and their intermixtures.

ITALY

(From Our Regular Correspondent)

June 5, 1947.

National Surgical Congress

The first postwar national surgical congress was held in Florence at the same time as that for internal medicine. Professor Pedotti, chairman of the Swiss Surgical Society, and Professor Datymer, representing the surgeons of Poland, participated.

The first joint session with the medical association was devoted to papers on tumors of the colon. Professor Alessandrini of the University of Rome presented a paper from the medical point of view, Professor Matronola of Rome from the surgical point of view, and Professor Cignolini of Genoa from the roentgenologic point of view.

Professor Alessandrini's paper was devoted particularly to epithelioma's of the colon and to their early diagnosis; he emphasized the progressive increase of these neoplasms as demonstrated by clinical and anatomicopathologic statistics. According to the speaker the continued use of laxatives with liquid petrolatum as a base or of derivatives of anthracene or phenanthrene for years or decades may be considered as one of the causes of the increase. With regard to therapy, surgical intervention may be the method of choice as soon as the diagnosis of epithelioma of the colon has been established; it should be preceded by adequate medical preparation (rational irradiation, insulin therapy, occasionally blood transfusions, sulfonamide therapy). The opportunity of surgical intervention for diffuse polyposis is controversial. A substantial diet is suggested for inoperable cases; it should be poor in cellulose, in fats and in sodium chloride but rich in potassium.

In discussing surgical intervention, Professor Matronola stated that the first step should be exploratory, consisting in an extensive laparotomy which allows for examination of the internal abdominal cavity. The location and the extent of the tumor should be established on exploration as well as the occurrence of adjacent or distant metastases, and it should be decided whether the removal of the tumor will be feasible. In case it should not be feasible, one may resort to a palliative operation, i. e. an internal derivation (anastomosis) or an external one (artificial anus). Hemicolectomy may be performed as a radical operation for cancer of the right colon, but there is no agreement with regard to one or two stages. According to the speaker, intervention in two stages may be generally preferred. There is no consensus with regard to the method of choice for intervention of cancer of the transverse colon: segmentary resection, the Mikulicz operation, hemicolectomy. The mortality rate is high. More difficult problems may be presented to the surgeon by the left colon. For cancer of the left angle and of the descending colon, left hemicolectomy may be preferred in most cases, preceded by a cecal anus and followed by transverse sigmoidostomy. Cancers of the sigmoid flexure may easily be extirpated because of the length of the mesentery. The simplest and safest method of treatment of epithelioma of the rectosigmoid consists in low amputation, which may be terminated by a definite iliac anus. The operative mortality rate has been reduced to a negligible percentage.

Professor Cignolini demonstrated the great difficulties met on x-ray examination of the colon. He stressed the notable parallelism between the neoplastic symptomatology of the colon and that of the stomach. The greatest difficulty in establishing a differential diagnosis between intestinal and gastric forms results from the fact that the pathology of the colon is much more variable than that of the stomach. With the aid of the technic of intestinal intubation it becomes possible in many cases to localize and to define the obstructional lesion.

Trauma of the Thorax

Professor Gherardo Forni of the University of Bologna demonstrated that the thoracic viscera may be exposed to violent and highly complex traumatism because of their plurality and their vital functions. The symptoms vary according to the anatomic lesion and the intensity of the trauma. Pain may be predominant in parietal contusions with skeletal lesions and may be exacerbated with respiration. Pulmonary and cardiac lesions may be manifested by cough, blood in the sputum, dyspnea, cyanosis, tachycardia and arrhythmia. X-ray examination is of great significance for demonstrating a displacement of the viscera, the loss of their normal relationship and the occurrence of fluid or gas in the pleural and pericardial cavities. Surgical intervention may be required by the occurrence of a hypertensive pneumothorax, of a generalized emphysema spreading to the mediastinum or by a profuse hemothorax. It presents excellent therapeutic judgment in case of profuse and threatening hemothorax to remove the blood and to induce a pneumothorax (Morelli). A pneumothorax of mild degree may not require any treatment; in pneumothorax with high tension, puncture may be performed. Bilateral pneumothorax, which presents a serious threat to the life of the patient, requires immediate intervention: puncture of the thorax and occasionally thoracotomy with suture of pulmonary lacerations. In generalized emphysema with cyanosis and progressive asphyxia a suprasternal incision may be made and an aperture of the mediastinum with application of drainage by means of a cupping glass.

Cancer of the Uterus

Professor Antonio Biancheri believes that subtotal hysterectomy may be the treatment of choice in all cases in which removal of the uterus may be required for fibroma or for connected causes in the absence of any involvement of the cervix. In those cases, however, in which the cervix presents lesions from which suspicions of a precancerous condition may arise it may be necessary to remove the mucosa or the involved segment of the cervix by means of electrocoagulation or by the application of radium. In cancer associated with pregnancy, Wertheim's operation remains the method of choice according to the statistics of Italian gynecologists.

Professor Luigi Caravani believes that the symptoms which had been considered as an initial manifestation of cancer of the body of the uterus should be interpreted as one of a spreading process of the already present blastomatous permeation of the entire female genital system. Consequently he suggested total colpohysterectomy by the abdominoparavaginal route, with the removal of the entire genital complex and all the glands connected with it. The speaker contrasted the high postoperative mortality rate (actually about 28 per cent, but with a possibility of being reduced with improved technic) with the high percentage (better than 80) of permanent recovery in women with cancer who received similar treatment.

Professor Eugenio Milani emphasized that the guiding line for radiologic treatment of cancer of the cervix of the uterus should be in general that endocavitary Curie therapy may be combined with transcutaneous roentgenotherapy. A two stage treatment may be effective in the majority of cases, but there are also workers who favor simultaneous treatment. A combined treatment may likewise be the guiding line for radiologic treatment of the body of the uterus in all the inoperable cases as well as in those that have passed the first stage. For the operable cases the statistics demonstrate that the percentage of a five to ten year recovery may be higher if surgical intervention can be combined with postoperative roentgenotherapy. The treatment of recurrence and metastasis may be essentially radiologic.

Executive Committee

The new executive committee of the Italian Surgical Society was elected with Professor Luigi Torraca as president.

The subjects for papers at the next congress are (1) surgical treatment of pulmonary tuberculosis, (2) surgical treatment and treatment with estrus producing compounds for cancer of the prostate, (3) cicatricial stenosis of the esophagus and (4) (in cooperation with the Italian Society of Internal Medicine) mediastinal syndromes.

MOSCOW

(From Our Regular Correspondent)

June 7, 1947.

Antituberculosis Vaccination

The work of Soviet scientists begun in 1925 demonstrated that Calmette's antituberculosis vaccine decreases the mortality among vaccinated children from two to four times. Those figures are based on prewar data when about three million children were vaccinated—more than in all other countries of the world. Weisfeiler and his collaborators demonstrated that Calmette-Guérin bacillus efficiency during parenteral administration is much higher when used twice. Professor Pokrovskaya showed the possibility of vaccine intensification by means of a nonspecific mesenchymotropic preparation. Khmelnitskaya and Rabinovich found that small doses of Calmette-Guérin bacillus used subcutaneously have in certain types of tuberculosis a curative effect. Weisfeiler, Baydakov and Tourgetsky could not confirm Calmette's observations on the rapid destruction of their bacillus in the vaccine fluid. If it is obtained from young cultures, its immunizing properties are preserved about one month. In 1937 Weisfeiler reported on obtaining a dry vaccine with a longer expiration date. His collaborator Leschinskaya worked out a method of preparing a dry glucose vaccine, and it has been used since 1943, when the people of distant areas and regions released from fascist occupation were immunized with the dry glucose vaccine. Great Britain has begun experiments with the dry vaccine, based on the Soviet method.

At present methods for obtaining a more potent vaccine are being worked out, and a search is being made for new cultures with high immunizing properties. Exact experimental figures are being collected on the grade of high quality dry vaccine and on optimal conservation conditions for the Calmette-Guérin bacillus in dry form.

Acclimatization of Residents in the Arctic Regions

The aim of the expedition in the arctic region of two Institutes of the Academy of Medical Sciences of the U. S. S. R.—General Hygiene and Nutrition, in 1946, was a mass observation of the population. It was noted that inhabitants of Northern regions, become accustomed to a new environment best of all—those from middle and central parts of the Soviet Union do so with some difficulty—and natives of the South do so worst of all. In this climate the time of work is changed four times yearly because of the long polar night. Nearly 80 per cent of the residents after arriving suffer from nostalgia, which completely disappears when people are busy working.

The morbidity in the arctic is less than in the other parts of the Soviet Union. Living in conditions of eternal frost results in freezing of the feet even during summer because the soil layer (exposed to melting) does not exceed 40 cm. Wounds close without suppuration because of the sterility of the air and small virulence of micro-organisms. Comparatively frequent is appendicitis. Arthralgia occurs with the low temperature but without objective changes in the joints. Heart and blood vessel diseases are quite rare. Caries is very common; it spreads quickly and is accompanied with pyorrhea. One of its possible causes is the use of demineralized snow water.

The investigators find that the arctic climate will have a favorable influence. The polar night is characterized by many factors having a stimulating influence—electrical status of the atmosphere and presence of enormous quantities of ionized air rich with ozone. The polar radiation also is stimulating. The first objective is to organize a work and rest regimen in order to maintain a normal physiologic rhythm.

Again this year, expeditions of scientific institutes in the arctic region are taking place to study the mechanism of the acclimatization processes.

Visceral Leishmaniasis (Kala-Azar)

Nicholas I. Latichev of the Institute of Epidemiology and Infectious Diseases of the Academy of Medical Sciences of the U. S. S. R. has reported a study of visceral leishmaniasis. In 1940 in Middle Asia about 2,000 cases were identified and in the Precaucasus about 500. Thus kala-azar takes an insignificant place among other diseases, in our country, especially in comparison with India, where it sometimes takes on the character of an epidemic.

During the building works in 1933 in the valley of the Waczch River (South Tajikistan) there were a number of cases of "chinidine resistant malaria without parasites in the blood," which were later identified as visceral leishmaniasis. When the epidemiology of the disease was studied the jackal was suspected as a reservoir of the virus and it became necessary to demonstrate the existence of spontaneous infection in those animals. In 1946 in the liver and spleen of some jackals killed in the lower parts of Kafirjagan River Leishmania was identified. On the basis of these facts Latichev finds that visceral leishmaniasis is not a simple infection but has three different types. The first is a zoonosis affecting rural populations which are infected from natural reservoirs of the virus—jackals and stray dogs. The second type, anthroponosis, is found in towns where the principal source of infection is the patient and dogs are only a minor factor. The cause of the third type, Indian kala-azar, is closely connected with the human organism.

Institute of Gynecology and Obstetrics

At the third session of the Institute of Gynecology and Obstetrics of the Academy of Medical Sciences of the U. S. S. R. Professor E. Berkovich and his associates reported a study of placental substances influencing the mechanism of labor. They found that the placenta contains a large amount of acetylcholin which the placenta synthesizes. Its action is accelerated by vitamin B_1 and pituitary, which sensitize the uterine muscle. However, when verifying the action on the uterus of potassium, calcium, thiamine and pituitary it was demonstrated that its oxytocic effect is rather small. Thus the authors conclude that the blood oxytocic properties of lying-in women depend on acetylcholine circulating in their blood and diminution of cholinesterase.

Professor G. Salgannic and his associates spoke on the excitability of sensory centers of pregnant women. An increase of cerebral excitability of the optical centers at the sixth month and one to two weeks ante partum was observed. During labor excitability of the cerebral sensory centers is decreased and soon after delivery reaches its usual figures. For evaluating the status of the vegetative, nervous and reticuloendothelial systems much clinical material was studied. During the second period of pregnancy and labor sympathicotonic symptoms are present; simultaneously the reticuloendothelium is depressed; only in certain cases can a total vegetative dystonia be observed. These observations demonstrate the influence of the protective systems in pregnant women and may be of use for increasing their resistance to infectious diseases.

The anesthetic and labor accelerating effect of thiamine reported by Professor R. Schub (The Journal, January 11, p. 122) was confirmed by dozent D. Ginodman and Drs. M. Tyurin and M. Ziroulnikov. They noted a parallelism between the content of vitamin B_1 in the organism, the duration of labor and labor pains. They were more frequent and powerful after thiamine administration. However, its anesthetic action is small.

MADRID

(From Our Regular Correspondent)

June 7, 1947.

Studies of the Spanish School of Cajal

The Spanish School of Histology and Pathology, which under S. Ramon y Cajal has become the pride of Spain, is still active in spite of all difficulties. The names of Pio del Rio Hortega (who died a year ago) and J. F. Tello are well known and some of their recent work merits description. Tello, Cajal's favorite pupil, is working in his old laboratory at the Cajal Institute (now incorporated in the Higher Council for Scientific Research and subsidized by the state) and, since 1942, has carried out studies on the structure of the tactile and motor nerve endings.

As a result of his studies on the motor endings of batrachians and reptiles he has been able to prove that in all animals examined the ramification of the axon in the motor endings of the voluntary muscles appears enveloped in a nucleated sheath, which seems to be the continuation of the sheath of Schwann. More recently he has published two studies on neurogenesis. In the first he reviews the genesis of the sympathicus by Bielschowsky's method in blocks and not only confirms his previous ideas on mesodermic origin but sees this forming at the expense of syncytial cords of endothelium, starting from the aorta and resembling vascular buds.

Of special interest, because it is an original and fundamental contribution to knowledge of the disputed problem of the neurogenesis of cranial ganglions, especially of the part played in them by the neural crest, is his latest published work. In it he deals with the respective participation of the neural crest and the placodes in the formation of the sensitive cranial nerves (in chickens), proving that most, if not all, of the nervous elements proceed from the ectodermic placodes subsequent to the disappearance of the crest. All these papers were published in the review *Trabajos del Instituto Cajal de Investigaciones Biológicas* between 1942 and 1946.

Importance also attaches to the work of Dr. F. de Castro, professor in Seville University, carried out in the Cajal Institute (Madrid). Continuing his investigations by his crossed anastomosis method, which makes it possible to model a simple bineuronal reflex arc, he has arrived at a new concept of the synapsis in centers and peripheral ganglions. In the modeling of the synapsis, three discontinuous active elements are concerned without any trophic continuity between them: the affector element, the effector element and the intermediary element (neuroglia), whose protoplasm, interposed between the other two, serves as an indispensable mediator of the nervous current. This is sometimes the Schwann cell, sometimes the intercapsular cell of the ganglion and sometimes again the oligodendroglia itself. The genetic and morphologic identity of these elements, already upheld by Pio del Rio Hortega and demonstrated by J. M. Ortiz Picon in the case of the ganglion cells, is verified by Rodriguez Perez in the case of the Schwann cell.

The doctrine of these Spanish authors is summed up in the concept of "tripolar synapsis," which offers a physiologic explanation of the polarization of current and the inhibition of the antidromic conduction at the level of the first intercalary station. These facts reinforce the thesis of the anatomic unity of the nerve cell.

Professor J. Sanz Ibañez, professor of histology and pathology in Madrid University, has carried out research on the experimental histopathology of poliomyelitis by Nissl's method and silver saturation. He studies the spinal medulla of mice, guinea pigs and monkeys with paralytic manifestations after virus infections and proves the existence of lesions of the central nervous system, above all in monkeys. But the fundamental change occurs in the peripheral nerves of the paralytic limbs (in the distal parts) and also in the myoneuronal synapsis, the thick nerve trunks being free from lesions. There are sometimes regenerative phenomena in the synapsis which, according to him, are evidence of the absence of central lesions, since that would not be possible if the spinal neuron was infected.

According to Sanz Ibañez the paralysis is of peripheral origin and is related to the motor plate, as is proved by the presence of viruses in the muscles of the paralytic legs of mice. He also studied the degenerative lesions of the liver, spleen, heart, kidneys, intestine and adrenals, which he attributes to the presence of virus in the blood. He describes clinical forms without paralysis or any neuraxial lesions and succeeds in adapting to guinea pigs the mouse virus by transmitting it in series and distinguishing (1) central paralytic forms, which are incurable, with lesion of the motor neurons; (2) peripheral paralytic forms, which are sometimes curable, since they affect only the neuromuscular synapsis; (3) nonparalytic forms with a febrile type (neutralization of the virus by the sick animal's plasma and not by the normal ones); (4) an apyretic nonparalytic type of great epidemiologic interest, since it might be a source for the transmission of the disease.

Dr. L. Arteta, head of the Necropsy Department of the Madrid General Hospital and Assistant Professor of the Faculty of Medicine, a pupil of the Cajal-Tello-De Castro trio, has made a deep study of pellagra. He has studied in great detail the tongues of pellagrous patients, microscopically and macroscopically, rigorously excluding possible causes of error, proving the existence of a noninflammatory (i. e. degenerative) segmentary neuritis with trophic alterations of the remaining components of the tongue. Basing his work on histology, he comes to the conclusion that glossitis is a disturbance consecutive to primitive alterations of the nervous system. Arteta proposes, to designate the absence of inflammatory manifestations and to honor the Spanish investigators who discovered pellagra, the use of the term "Casal's glossopathy."

Arteta also has described the technic of a new silver staining method which is particularly constant and applicable to large sections of organs of the nervous system preserved for a long time in solution of formaldehyde. Finally he has devised a technical modification of Ferry's method destined to make permanent the dryings with polychrome blue which so far have been used in the rapid diagnosis of pathologic tissues in surgical operations; he has achieved stabilization of the color, using a fixing solution of ammonium molybdate and a few devices of his own.

Correspondence

CARBOHYDRATE METABOLISM IN ULCER PATIENTS

To the Editor:—In their article "Gastric Operations" in The Journal, June 14, Zollinger and Hoerr describe a group of ulcer patients with postoperative symptoms which they attribute to a disturbance in blood sugar levels. One is led to believe that this disturbance is due to the altered gastrointestinal physiology caused by the surgery. These authors report that both hypoglycemic and hyperglycemic curves were observed in their patients. I studied sugar tolerance curves in a group of ulcer patients who had never undergone surgery and who were being treated medically in an outpatient department and in the ward. Practically every patient had an abnormal tolerance curve. The majority showed hypoglycemia, the remainder hyperglycemia. I also found similar abnormal curves in patients with typical ulcer symptoms but without signs of ulcer on x-ray examination. Both ulcer and pseudoulcer patients responded to a low carbohydrate diet aimed to overcome the abnormal blood sugar levels. The results of this study were published in a paper titled "The Pain Mechanism in Ulcer and Pseudoulcer Syndromes" (*Rev. Gastroenterol.* 7:485 [March-April] 1940). There was a definite correlation between the pain in ulcer and a fall in blood sugar. In hypoglycemic patients the pain coincided with a fall to absolute hypoglycemic levels. In patients with hyperglycemia the pain coincided with periods of sharp fall, not necessarily to hypoglycemic levels. In hyperglycemic patients the fall in blood sugar was sharp and to "relative hypoglycemia," a term used by several authors to explain typical hypoglycemic symptoms in hyperglycemic patients. The relief from pain which follows the ingestion of food in ulcer was correlated with a rise in blood sugar following the ingestion of food.

From my studies I concluded that the fundamental cause of ulcer and pseudoulcer symptoms was a disturbance in carbohydrate metabolism caused primarily by the ingestion of foods containing starch and sugar. The relief from symptoms such as, pain, flatulence, heartburn, nausea, weakness, faintness, headache and syncope, with a low carbohydrate diet, was attributed to the normal blood sugar levels that are obtained with such a diet. It is thus apparent that the disturbance in carbohydrate metabolism in ulcer patients is fundamental and is present in the patient who has not been operated on. Surgery may aggravate this disturbance. The beneficial effects that are observed with frequent feedings in these patients I have attributed to the stabilizing effect of such a regimen on blood sugar levels. Frequent feedings of milk and cream are especially beneficial, since such a regimen contains no starch and little sugar.

The diet employed by me ranged from 2,300 to 2,900 calories (carbohydrate, 114 to 124 Gm.; protein, 101 to 129 Gm.; fat, 161 to 212 Gm.). Aside from six thin soda crackers each day, there was no starch or sugar allowed. Recently I have eliminated the crackers from the diet. The carbohydrate allowed was ingested chiefly in the form of 5 and 10 per cent vegetable. Fruits were allowed rarely, and no fruit juices were allowed at all. In recent years several authors have stressed the beneficial effects of protein foods and protein hydrolysates in the treatment of ulcer. These authors give one the impression that the protein is chiefly responsible for the good results obtained. This could apply in patients with hypoproteinemia. However, most ulcer patients have no hypoproteinemia. The diet employed in my study had a high protein content. But I have attributed the good results mainly to the absence of starch and sugar. A diet which is high in protein and which contains ordinary amounts of starch and sugar will not prove beneficial. The starch and sugar must be eliminated.

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Selective Service Act: Physician Need Not Reemploy Discharged Attorney to Handle Collection Work.—The plaintiff filed an action against the defendant physician claiming that he had been denied the reinstatement and compensation to which the provisions of the Selective Service Act entitled him. The case was heard in district court D, Maryland.

The defendant physician specialized in the examination and treatment of the eye and the prescribing and furnishing of eye glasses to his patients. Most of his large professional practice was conducted on a credit basis, and in July 1942 he employed the plaintiff attorney to collect his regular and delinquent accounts, paying him a salary plus commission for such services. On July 1, 1943 the plaintiff was inducted into the armed forces. During the plaintiff's absence the defendant employed various persons and a collection agency to handle his collections but none of them were paid a salary; they all worked for a straight commission. The plaintiff was discharged in February 1945 and sought reinstatement with the defendant, who offered the plaintiff a permanent position as sole collector in the same territory in which he had worked before the war but solely on a commission basis. This the plaintiff refused, claiming that he was entitled to be reinstated to a position of "like pay," which, he argued, could be accomplished only by paying him a salary plus a commission.

It must be noted, said the court, that the act exempts the employer from making a reinstatement completely equivalent to the former job if "the employer's circumstances had so changed as to make it impossible or unreasonable to do so." We agree, continued the court, that some very clear reason must be given for the refusal on the part of the employer to give reinstatement to the returning veteran according to the express terms of the act. We also agree that "unreasonable" means more than "inconvenient" or "undesirable." The precise question for decision, continued the court, is this: Was the defendant justified in refusing to reinstate the plaintiff on the basis of compensation which plaintiff demands? In other words, has the defendant sustained the burden which rests on him of proving that "[his] circumstances have so changed" between the time when the plaintiff left the employment of the defendant and when he applied for reinstatement "as to make it impossible or unreasonable" for the defendant to restore the plaintiff to a position of "like pay"?

The testimony shows that in 1942 when the plaintiff entered the defendant's employment, the defendant had on his books more than $32,000 in outstanding accounts, representing 4,115 individual accounts. The corresponding figures for 1943 were $24,640 and 3,213 accounts; for 1944, $9,673 and 1,270 accounts; for 1945, $6,078 and only 707 accounts; and in February 1945, at the time when plaintiff sought reinstatement, $5,819, represented by 731 accounts. These figures stand uncontradicted and indicate a very substantial decline in defendant's professional work while plaintiff was in the service, which, defendant testified, was due very largely to the fact that, during the peak period of the war, he was called on to make an abnormal number of eye examinations for workers in local war plants, and that, as war production and the amount of war plant labor became greatly reduced when the war ended, these examinations fell off correspondingly. During October 1942, November 1942 and April 1943 the defendant expended in monthly commissions approximately $235. During the first six months after plaintiff's discharge, defendant expended an average per month of approximately $110, or less than half of the amount spent in the three months referred to. These figures clearly indicate that there is nothing padded, no misrepresentation, in defendant's position. His business showed a very material falling off, which doubtless justified retrenchment along several lines. Was he justified in adhering to this retrenchment in outlay for collecting accounts when the plaintiff sought restoration of his former position? We believe, said the court, that the defendant was so justified.

To decide otherwise would be tantamount to saying that, although there is no need to have a particular type of position in a given business nevertheless the act requires that it be set up again for the benefit of the ex-serviceman Here there is no question of competition or personality involved but merely the abolition of a salary arrangement long prior to the return of the plaintiff, because the defendant decided reasonably and honestly, as we believe owing to a very substantial reduction in the number of those whose eyes he examined that he no longer required the services of a salaried collector The court accordingly entered a judgment in favor of the defendant physician —*Myers v Barenburg, 68 F Supp 697 (1946)*

Medical Motion Pictures

FILM REVIEWS

Errors of Refraction Directed by William Alfred Mann M S M D and Emile George Nadeau B S M D Produced in 1941 by Northwestern University Medical School Photography by Mervin W LaRue 16 mm color silent 1,700 feet (one reel) Showing time fifty minutes Procurable by rental $4 or by purchase from Audio Visual Medical Education Department Northwestern University Medical School 303 East Chicago Avenue Chicago 11

The purpose of this film is to present the basic principles involved in the optical properties of lenses and the refractive errors of the eye The subjects included are simple refraction, prisms convex lenses various forms of convex lenses concave lenses cylindric lenses the normal eye the formation of an image accommodation presbyopia emmetropia myopia hyperopia myopia hyperopia and astigmatism

This film done entirely in animation begins with a series of colored perspective pictures showing the deflection of light by passage through glass in the form of rectangular blocks prisms, cylinders and other solid forms It shows the structure of the human eye and how an external object consisting of a pattern of points, becomes represented by an inverted pattern of point images on the retina Colored diagrams illustrating the meaning of 'diopter' serve to introduce a discussion of accommodation hyperopia myopia and presbyopia

The question arises whether the film teaches anything that could not be taught more accurately and at less expense by a book of black and white diagrams and a precise use of mathematical terms The film labors the simple and obvious and gets into difficulty as soon as it approaches even such simple concepts as that of the conoid of Sturm (misspelled Sturm in the film) More difficult concepts like that of the toric lens, the movements of images in the plane and concave mirrors used in retinoscopy, corresponding points and the horopter are the ones on which medical students need help It is evident that the difficulty of illustrating these ideas by a movie would be huge

The film would be useful early in a course in ophthalmology or in physiologic optics as a loose review of elementary facts, to give a glow of color, as it were, to the subject It is not sufficiently detailed to constitute a good introduction by itself, and since it does not undertake to illustrate anything whatever of an advanced nature it is not likely to prove useful in later work

Removal of Dermoid Cyst of the Orbit Prepared in 1942 by Rudolph Jaeger M D Jefferson Hospital Philadelphia 16 mm color silent 400 feet (one reel) Showing time sixteen minutes Procurable on loan from Author Jefferson Hospital 10th and Sansom streets Philadelphia 7

This short film is interesting and instructive Most of the photography is fairly good Occasionally the focus is not changed quickly enough for the manipulations involved The technic of the operation is good, but there is not much documentation There is no history of the patient no differential diagnosis and but little follow-up of the patient In this type of case ocular movements are of paramount importance and, although the pupils are equal in the film the patient is not asked to look in all directions, which would demonstrate normal ocular movements The actual removal of the tumor is not obvious to the onlooker The cosmetic result is good

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in The Journal July 19, page 1042

BOARDS OF MEDICAL EXAMINERS

Alabama *Examination* Montgomery June 22-24 1948 Sec, Dr D G Gill 519 Dexter Ave Montgomery 4

Arkansas *Eclectic* * Little Rock, Nov 6 Sec Dr Clarence H Young 1415 Main St, Little Rock

California *Written* Los Angeles Aug 25-28 *Oral* San Francisco, Nov 8-9 Sec, Dr Frederick N Scatena 1020 N St Sacramento 14

District of Columbia * *Endorsement* Washington, Sept 8 Sec, Commission on Licensure Dr G C Ruhland 6012 Municipal Bldg Washington

Florida * *Examination* Jacksonville, Nov 25-26 Sec, Dr Harold D Van Schaick 6675 Windsor Lane La Gorce Island Miami

Georgia Atlanta, Oct 14-16 Sec, Mr R C Coleman, 111 State Capitol Atlanta 3

Illinois Chicago, Oct 14-16 Supt of Registration Dept of Registration and Education Mr Philip M Harman, Springfield

Indiana *Examination* Indianapolis, June 1948 Sec, Board of Medical Registration and Examination Dr Paul R Tindall K of P Bldg, Indianapolis

Kansas Topeka Dec 3-4 Sec, Board of Medical Registration and Examination Dr J F Hassig 905 North 7th St, Kansas City

Kentucky *Examination* Louisville, Sept 22-24 Sec, State Board of Health, Dr P L Blackerby, 620 S Third St, Louisville 2

Maryland *Medical Examination* Baltimore, Dec 9-12 Sec, Dr Lewis P Gundry 1215 Cathedral St, Baltimore *Homeopathic Examination* Baltimore Dec 9-10 Sec, Dr J A Evans, 612 W 40th St, Baltimore

Minnesota * St Paul Sept 3-5 Sec, Dr J F DuBois, 230 Lowry Medical Arts Bldg, St Paul

Mississippi *Endorsement* Jackson, Dec 1947 Asst Sec, State Board of Health Dr R N Whitfield Jackson

Montana Helena Oct 6-8 Sec Dr O G Klein, First National Bank Bldg, Helena

Nevada Carson City, Nov 3 Sec, Dr G H Ross 215 N Carson St, Carson City

New Hampshire Concord Sept 11-12 Sec Board of Registration in Medicine Dr John S Wheeler, 107 State House, Concord

New Jersey *Examination* Trenton, Oct 21-22 Sec, Dr E S Hallinger, 28 W State St, Trenton

New Mexico * Santa Fe, Oct 13-14 Sec, Dr LeGrand Ward 141 E Palace Ave, Santa Fe

North Carolina *Endorsement* Morehead City, July 31 Sec, Dr Ivan Proctor, 226 Hillsboro St, Raleigh

Rhode Island * *Examination* Providence Oct 2-3 Chief, Division of Professional Regulation 366 State Office Bldg, Providence

South Carolina Columbia Nov 10-12 Sec, Dr N B Heyward, 1329 Blanding St Columbia

West Virginia *Examination* Charleston Oct 2-4 Commissioner, Public Health Council Dr N H Dyer State Capitol, Charleston

Wyoming *Examination* Cheyenne, Oct 6 Sec Dr G M Anderson, Capitol Bldg, Cheyenne

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* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska Juneau, First week in August Sec, Dr C Earl Albrecht, Box 1931, Juneau

Arizona Sept 16 Sec Mr Francis A Roy, Science Hall, University of Arizona Tucson

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District of Columbia *Examination* Washington Oct 20-21 Sec, Commission on Licensure, Dr G C Ruhland, 6012 E Municipal Bldg, Washington

Florida *Examination* Gainesville Nov 1 Final date for filing application is Oct 16 Sec, Dr W M Emmell, University of Florida, Gainesville

Michigan *Examination* Ann Arbor and Detroit, Oct 10-11 Sec, Miss Eloise LeBeau 101 N Walnut St Lansing

Minnesota *Examination* Minneapolis Oct 7-8 Sec, Dr Raymond N Bieter, 105 M Hall University of Minnesota Minneapolis

Nebraska *Examination* Omaha Oct 7-8 Dir, Bureau of Examining Boards Mr Oscar F Humble, State Department of Health, Room 1009, State Capitol Bldg, Lincoln 9

New Mexico *Examination* Santa Fe, Aug 3 Sec, Miss Marion M Rhea % State Land Office, Santa Fe

Oklahoma Spring 1948 Sec, Dr Frank Clinton Gallaher, 813 Braniff Bldg, Oklahoma City

Oregon *Examination* Portland, Sept 6 Final date for filing application is Aug 20 Sec Board of Higher Education Basic Science Examining Committee Mr C D Byrne University of Oregon Eugene.

Rhode Island *Examination* Aug 13 Chief, Division of Professional Regulation Mr Thomas B Casey, 366 State Office Bldg, Providence

Wisconsin *Examination* Madison Sept 27 Final date for filing application is Sept 20 Sec Mr William H Barber Watson and Scott Sts, Ripon

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

213:385-512 (April) 1947

*Clinical Features of Patent Ductus Arteriosus, with Special Reference to Cardiac Murmurs. S. A. Levine and A. E. Geremia.—p. 385.
*Infectious Hepatitis: Clihical and Laboratory Features of 295 Cases. H. J. Zimmerman, C. F. Lowry, K. Uyeyama and R. Reiser.—p. 395.
Liver Dysfunction in Rheumatic Heart Disease: Preliminary Report. R. W. Kissane, R. S. Fidler and T. E. Clark.—p. 410.
Treatment of Pneumococcic Pneumonia with Oral and Intramuscular Penicillin. H. F. Dowling, Georgine Rotman-Kava, H. H. Hussey and H. L. Hirsh.—p. 413.
*Pharmacologic and Clinical Experiences with Dimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl). T. H. McGavack, H. Elias and L. J. Boyd.—p. 418.
Intravenous Use of Human Ascitic Fluid in Shock, Nephrosis and Allied Conditions. R. D. Molina, H. A. Santos and M. M. Alimurung.—p. 435.
Renal Excretory Function and Diet in Diabetes Insipidus. S. B. Beaser.—p. 441.
Observations on Treatment of Carcinoma of Prostate by Orchidectomy. E. K. Landsteiner and H. P. Brown.—p. 450.
Femoral Bone Marrow Cells of the Albino Rat. Mildred Vogel.—p. 456.
Postpartum Blood: Clotting Mechanism and Relationship to Peripheral Blood Picture. A. C. Barnes.—p. 463.
Effect of Circulatory Factors on Bromsulphalein Test in Liver Disease. N. Blumberg and E. M. Schloss.—p. 470.
Menopausal Hypertension: Critical Study. R. D. Taylor, A. C. Corcoran and I. H. Page.—p. 475.
Amylase Levels During Mumps: Findings in Blood and Saliva. I. J. Wolman, B. Evans, S. Lasker and K. Jaegge.—p. 477.
Failure of Massive Salicylate Therapy to Suppress the Inflammatory Reaction in Rheumatic Fever. T. N. Harris.—p. 482.
Changes in Personality Appraisal Associated with Restricted Intake of B Vitamins and Protein. C. R. Henderson, N. C. Wheeler, H. C. Johnson and others.—p. 488.
Virus Pyogen and Virus Pyogen Photosensitivity Relationships in Cutaneous Disease. J. H. Stokes and H. Beerman.—p. 494.
Throat Medication: Survey of Current Trends. N. D. Fabricant.—p. 502.

Patent Ductus Arteriosus and Cardiac Murmurs.—Levine and Geremia studied 37 surgically verified cases of patent ductus arteriosus, with especial attention to the auscultatory signs. Many patients showed a moderate diastolic murmur. The diastolic component was never louder than the systolic; occasionally it was of the same intensity but generally it was fainter. A peculiarity commonly observed was that the murmur appeared to become louder during the latter part of systole, enveloping the second heart sound and continuing with decreasing intensity during diastole. A palpable systolic thrill was present in 21 of 37 cases. This was maximum in the second and occasionally in the first left interspace. It was always systolic in time but occasionally continued well into diastole. In doubtful or puzzling cases catheterization of the heart will be necessary to establish an accurate preoperative diagnosis and avoid harmful surgery.

Clinical and Laboratory Features of Infectious Hepatitis.—Zimmerman and his associates studied 295 cases admitted to a general hospital in eastern France. On the day after entry the blood count, icterus index and urine examinations were performed. Blood icterus determinations and pigment studies of the urine were repeated at three day intervals throughout the hospital stay. Other laboratory studies were performed as indicated. Different disease patterns were differentiated depending on the presence or absence of jaundice, occurrence of relapses and severity. The incubation period was estimated to fall within the accepted three to six week range. Onset was categorized on the basis of the insidiousness or rapidity of the symptom evolution and presence or prominence of systemic and respiratory symptoms. Anorexia, dark urine, malaise, nausea and abdominal pain were the most common symptoms. Jaundice, tender hepatomegaly, adenopathy and occasional splenomegaly were the significant signs. Duration of signs and symptoms was rarely less than five weeks, and many patients had residual disease after eight weeks. Although no deaths occurred, there were 6 cases which showed a clinical picture said to herald a fatal outcome. Most complications were mild. Gingivitis, skin petechiae, melena, epistaxis and "liver spots" occurred. The typical hemogram revealed no anemia but a tendency to reversal of the lymphocyte-neutrophil ratio and slight increase in eosinophils. Elevated serum globulin is of diagnostic and prognostic significance. Patients with deep jaundice, bradycardia and itching had bile salts in the urine. Rest and a diet with high protein and low fat content are the most important factors in treatment.

Pharmacologic and Clinical Experiences with Benadryl.—McGavack and his associates observed 60 normal subjects and 242 patients in order to obtain pharmacologic data and evaluate the therapeutic range and the unpleasant side effects of benadryl. Benadryl is an alkamine ether with a powerful antihistamine action. This is indicated by its ability to suppress completely the dermal and gastric responses to histamine and to decrease capillary permeability. These effects are further demonstrated through the clinical relief afforded patients with diseases in which sudden and/or prolonged releases of excessive quantities of histamine play a pathogenic role. An atropine-like activity for benadryl is suggested by its effects on the eye when applied topically. The variations in blood pressure may simulate one phase of the action of atropine. Disturbances in the sensorium observed in some of the patients receiving the drug have suggested a scopolamine-like action. From the clinical point of view it can be said that benadryl is an exceedingly potent antihistamine and antispasmodic drug which lacks unpleasant cardiovascular and nervous side effects attendant on the use of sympathomimetic agents such as epinephrine, ephedrine and amphetamine. Toxic reactions, while common, rarely preclude its continued use.

American Journal of Medicine, New York

2:419-548 (May) 1947

Symposium on Streptomycin

Streptomycin: General Considerations, Tests for Bacterial Sensitivity and Methods of Measurement of Streptomycin in Body Fluids. W. E. Herrell and F. R. Heilman.—p. 421.
*Streptomycin in Tuberculosis. H. C. Hinshaw, Marjorie M. Pyle and W. H. Feldman.—p. 429.
Use of Streptomycin in Treatment of Bacterial Endocarditis. T. H. Hunter.—p. 436.
Streptomycin in Peritonitis. H. A. Zintel.—p. 443.
Topical Use of Streptomycin in Wounds. E. L. Howes.—p. 449.
Present Status of Treatment for Influenzal Meningitis. Hattie E. Alexander and Grace Leidy.—p. 457.
*Treatment of Tularemia with Streptomycin. L. Foshay.—p. 467.
Treatment of Urinary Tract Infections with Streptomycin. W. L. Hewitt.—p. 474.
Streptomycin Therapy in Undulant Fever. G. H. Finch.—p. 485.
Toxicity of Streptomycin. W. McDermott.—p. 491.

Streptomycin in Tuberculosis.—Hinshaw and his associates administered streptomycin to more than 100 patients with tuberculosis of various types. Experience with this antibiotic agent proved that tuberculosis is amenable to antibacterial therapy. Streptomycin is predominantly bacteriostatic rather than bactericidal, and its therapeutic value is limited by the fact that after exposure to streptomycin for weeks or months strains of Mycobacterium tuberculosis which are resistant to the effects of the drug may be isolated. Hence streptomycin is of most value in conditions in which temporary suppression of the infection will enable the patient to gain the ascendancy over his disease, as in cases of hematogenic tuberculosis, including generalized miliary tuberculosis and tuberculous meningitis. For these conditions large doses (1 to 3 Gm. daily) must be given parenterally for several months. For meningitis intrathecal injections are imperative also during the early weeks of treatment. Exudative pulmonary disease, ulcerating lesions of the respiratory tract and tuberculous draining sinuses have responded to treatment with streptomycin. It has some place in the treatment of bilateral renal tuberculosis or tuberculosis of a solitary kidney. It is also used before and after thoracic surgery for pulmonary tuberculosis. Because of the potential toxicity, use of the drug may be contraindicated in conditions which will respond satisfactorily to the usual methods of treatment.

Streptomycin in Tularemia.—Foshay employed streptomycin in the treatment of patients of an average age of 36 years with tularemia. One patient died, giving a fatality rate of 2.7 per cent for the series. The time of onset of therapy ranged from the second to the one hundred and twenty-third day of disease, with the average on the twenty-second day. Streptomycin was administered by intramuscular injection every three hours, occasionally every four hours. A few dangerously ill patients received part of the total amount by continuous intravenous or subcutaneous drips. The periods of administration varied from two to seventeen days and the total dosage from 0.64 to 29.5 Gm. A duration of disease of less than two months and a therapy-to-recovery interval of considerably less than forty-six days are new low constants for tularemia. Four patients were desperately ill, exhibiting the highly febrile, incontinent, stuporous, typhoid state. Transitions from this to one of cheerful competence with sustained progressive improvement were effected within seventy-two hours. In 10 patients with pneumonia and pulmonary exudates streptomycin therapy apparently effected a considerable reduction in the resolution time and, on the average, the less the interval between detection of pneumonia and institution of therapy the shorter was the period of repair. Although the experience is too small to permit formulation of an optimal dosage, no evidence has yet appeared that either (1) 0.5 Gm. per day for two days followed by 0.25 Gm. per day for four days or (2) 0.5 Gm. per day for six days is not adequate dosage for the case of usual severity, with or without tularemic pneumonia.

American J. Obstetrics and Gynecology, St. Louis

53:541-720 (April) 1947. Partial Index

Fibrous Nature of Human Cervix and Its Relation to Isthmic Segment in Gravid and Nongravid Uteri. D. N Danforth.—p. 541.
Amniotic Duct as the Key Structure in Determination of the Direction of Growth of Human Placenta and Its Orientation in Uterus. J. Krafka Jr. and L. Bowles.—p. 561.
*Clinical Significance of Rh Antibodies (Rh Agglutinins and Blocking Antibodies) in Serums of Rh-Negative Mothers: Study of 179 Cases. Joan Howard, Marjorie L. Hunt and Barbara C. McIvor.—p. 569.
False Positive Rh Typing Obtained with Commercial Anti-Rh Serum. R. D. Pettit and E. E. Evans.—p. 596.
Effect of Wartime Starvation in Holland on Pregnancy and Its Product. C. A. Smith.—p. 599.
*Selective Cytology Smear for Diagnosis of Cancer. J. E. Ayre.—p. 609.
Operation for Cure of Incontinence of Urine in Female. R. T. Frank. —p. 618.
Irregular Shedding of Endometrium. J. L. McKelvey and L. T. Samuels. —p. 627.
*Time of Ovulation. J. I. Brewer and H. O. Jones.—p. 637.
Placental Metabolism of Vitamin C: I. Normal Placental Content. A. C. Barnes.—p. 645.
Possible Etiologic Significance of Thrombosis of Placental Vein on Mechanism of Placental Infarction and Associated Toxemia of Pregnancy. R. A. Bartholomew.—p. 650.
Podophyllin Treatment of Soft Papillomas of Female Urethra. W. J. Reich, M. J. Nechtow and M. W. Rubenstein.—p. 658.
Uterine Adenomyosis. W. C. Hunter, L. L. Smith and W. C. Reiner. —p. 663.
Metastatic Chorionepithelioma of Lung Treated by Lobectomy. H. C. Maier and H. C. Taylor Jr.—p. 674.
Preliminary Clinical Report on New Synthetic Estrogen Meprane. S. H. Sturgis.—p. 678.
Meningitis Following Continuous Caudal Anesthesia. W. W. Brown Jr. —p. 682.
Dangers of Intracervical Pessary as a Contraceptive Device. S. L. Israel and D. G. Harrel.—p. 684.

Rh Antibodies in Rh-Negative Mothers.—Howard and her associates present an analysis of laboratory observations in 179 pregnant Rh-negative women. The study was undertaken in order to determine the relationships which might exist between the serologic data observed in the mothers and the clinical conditions found in the infants born to them, with the ultimate purpose of presenting the obstetrician with an antepartum interpretation of the significance of the laboratory findings in Rh-negative patients. The data were classified according to the Rh characteristic and the clinical conditions of the infant: group I, normal Rh-negative infants; group II, normal Rh-positive infants; group III, Rh-positive infants with subclinical hemolytic disease of the newborn, and group IV, Rh-positive infants with frank hemolytic disease of the newborn. There were 61 women in group I, 78 in group II, 17 in group III and 20 in group IV. In general, no patient demonstrating a high antepartum titer of either antibody, especially if their presence was detected early in pregnancy, was delivered of a clinically normal Rh-positive infant. A comparison of the occurrence of Rh agglutinin and blocking antibodies indicates that no definite cause and effect relationship between them can be inferred. There appears to be an apparent reciprocity between the titer trends of these two antibodies the significance of which is not entirely clear. The Rh agglutinin appears to be demonstrable in the maternal serum by the twentieth week ante partum. The blocking antibody follows the appearance of the Rh agglutinin and may not be present in demonstrable amounts earlier than about the tenth week antepartum. The hypothesis is suggested that blocking antibody may be produced not as a defense for the mother as is Rh agglutinin but as a protection for the erythrocytes of the fetus.

Selective Cytology Smear for Diagnosis of Cancer.—According to Ayre the original technic for the diagnosis of uterine cancer by the vaginal smear method was arduous and time consuming in the microscopic search for the specifically malignant cells sometimes obscured by the cellular desquamata, leukocytes and blood. Ayre describes a selective cytology technic which was developed in order to obtain evidence of cancer growth in the cells which become earliest involved in cervical cancer. The squamous cells encircling the tiny cervical opening at the squamocolumnar junction constitute a key point of origin for cancer. The spatula test offers a technic providing "surface biopsy" information of these cells prior to their desquamation. By study of these cells, morphologic changes have been identified believed to constitute a precancer cell complex. Many of these so-called precancer cases have shown clinically normal cervices, but the biopsies have verified the suspicious nature of the lesions. The selective cytology technic has been found to be more accurate as an indicator of endogenous estrogen by cornification counts in smears from the cervix and vagina in cancer cases. The previous aspiration method failed to reveal the true cornification level because of excessive amounts of blood and leukocytes obscuring the picture. Through early diagnosis of cancer by routine cytology tests, death from cancer of the cervix should become highly preventable.

Time of Ovulation.—The material comprising this report by Brewer and Jones was obtained from 100 women who were in active menstrual life and who had normal menstrual cycles. The material consists of surgical specimens of the ovary, ovaries or resected portions of ovaries and endometrium. The 100 patients were operated on on various days of the cycle. Days 3 and 27 were the only two days on which no patient was operated on. Diagrams with numbered and unnumbered blocks indicate day of operation, day of ovulation and estimated age of corpus luteum. Fifty-four of the 100 patients had ovulated during the present cycle studied. The range of time of ovulation is from the eighth through the nineteenth day of the cycle. The greatest number ovulated on days 12, 13, 14 and 15, with the highest peak on day 14. The author also reviews observations on ovulation made by other investigators and says that the consistency of the various reports, many of which are based on determination of age of corpora lutea, indicate that it is possible to estimate the age of corpora lutea with reasonable accuracy by histologic and cytologic methods.

American Journal of Public Health, New York

37:253-352 (March) 1947. Partial Index

Health Department and Medical Care: Responsibility of Health Officer in Medical Care Program. F. W. Jackson.—p. 253.
Today's Key to Better Public Health Service. W. P. Shepard and R. M. Atwater.—p. 278.
*Universal Serologic Reactivity with Lipid Antigens: Basis for "False Positives." R. L. Kahn.—p. 283.
Colorado Tick Fever. L. Florio and Mabel O. Stewart.—p. 293.
The Nurse's Role in Health Education in Industry. B. J. McGrath. —p. 298.

Universal Serologic Reactivity with Lipid Antigens.—Kahn presents data which show that lipid antigen and serum employed in tests for syphilis can be so treated technically as to elicit positive precipitation reactions in most nonsyphilitic per-

Sulfonamide Psoriasiform Dermatitis.—Philpott observed a cutaneous eruption which he thinks is due to sulfonamides. It is a type of psoriasiform dermatitis exhibiting many of the essential features of psoriasis. He reports 3 cases which illustrate some of the clinical features of this condition. All 3 patients were women. In each the eruption followed relatively soon after she had taken a sulfonamide drug; in each the appearance of the eruption warranted a clinical diagnosis of psoriasis, and in 2 of the 3 the microscopic diagnosis was consistent with that of psoriasis. None of the 3 had a suggestive hereditary history; none had previous disturbances of the skin. The duration of the eruption in 1 was four months, and the skin has been clear six months. In another the lesions were present four months and cleared from the body but remained in the scalp for fifteen months and then reappeared and have been present ever since. The third still has lesions and has had them continuously for twenty-one months. This experience points to infective processes as an inciting factor of initial attacks of psoriasis; apparently the sulfonamide compounds may act similarly. Holman suggests the possibility of the existence of psoriatic patients in whom the disease remains below the threshold of the eruptive phase until some potent excitant such as a sulfonamide drug precipitates an eruptive reaction.

Archives of Neurology and Psychiatry, Chicago

57:397-520 (April) 1947

*Cerebral Anoxia from High Altitude Asphyxiation: Clinicopathologic Study of 2 Fatal Cases with Unusually Long Survival and a Clinical Report of a Nonfatal Case. L. A. Titrud and W. Haymaker.—p. 397.
Cerebellar Medulloblastoma in Adults. E. B. Spitz, H. A. Shenkin and F. C. Grant.—p. 417.
Static Tremor with Hemiplegia; Report of a Case: Development, Progression for Seven Years and Postmortem Histologic Observations. F. A. Mettler, L. M. Davidoff and R. Grimes.—p. 423.
*Japanese B Encephalitis: Clinical Observations in Outbreak on Okinawa Shima. L. Lewis, H. G. Taylor, M. B. Sorem and others.—p. 430.
Incidence of Anisocoria and Difference in Size of Palpebral Fissures in 500 Normal Subjects. B. C. Meyer.—p. 464.
Relation of Mental Imagery to Hallucinations. P. F. Durham Seitz and H. B. Molholm.—p. 469.
*Medulloblastoma of Cerebellum, with Survival for Seventeen Years. W. Penfield and W. Feindel.—p. 481.

Cerebral Anoxia from High Altitude Asphyxiation.—Titrud and Haymaker report 3 cases of anoxic anoxia occurring in aviators while engaged in combat. In 2 cases the anoxia proved fatal in forty hours and three weeks, respectively, and the third patient was observed for a period of three weeks and then was transferred. In the first, the accident occurred at an elevation of "more than 20,000 feet," the patient being found unconscious five minutes after completion of a bomb run, at which time resuscitation was commenced. The second patient was exposed to an atmosphere at 24,000 feet for approximately ten minutes. In the third, it was at 27,000 feet that the oxygen tank of the plane was shot away, necessitating a rapid descent to 7,000 feet, during which time no effort could be made to revive the patient. In the case of forty hours' duration necrosis of ganglion cells was observed in the third to sixth laminas of the cerebral cortex, the striatum, the cerebellum, Sommer's sector of the hippocampus and the anterior horns of the spinal cord, mostly focal in character, and degeneration of myelin in the internal capsule. Also observed were early proliferation of the fixed tissue cells of the leptomeninges and vascular adventitia and mild exudation of lymphocytes and neutrophils into the meshes of the arachnoid, the perivascular spaces and, to a limited extent, the parenchyma of the brain. In the case of three weeks' duration the changes were of virtually the same location except that the cerebral white matter, brain stem and spinal cord were relatively spared. The damage in these cases of sudden and severe anoxic anoxia is strikingly similar to that observed in some of the other forms of anoxia.

Japanese B Encephalitis.—Lewis and his associates review the clinical characteristics of Japanese B encephalitis as observed in an outbreak in the civilian population of Okinawa Shima. They present an analysis of symptoms and physical signs in 65 patients and reports of 7 cases illustrating variations in the course and outcome of the disease. The disease was most common among children, resulting in a mortality of 20 per cent, and caused permanent disorder of the nervous system in at least one fifth of the patients. The manifestations were characteristic of a diffuse encephalomyelitis and resembled those of other neurotropic virus infections. The gross and microscopic lesions of the nervous system are compared with those of other virus encephalitides.

Medulloblastoma of Cerebellum, with Survival for Seventeen Years.—According to Penfield and Feindel, medulloblastoma of the cerebellum seems invariably fatal in spite of the fact that it is temporarily sensitive to roentgen therapy. Reports in the literature have pointed out the tendency to longer survival from this tumor in adults. In the case reported a medulloblastoma of the cerebellum made its appearance when the patient was 22 years of age. There was recurrence of symptoms after nine years and again after sixteen years. In the first (and probably the second) instance the recurrence was at a distance from the cerebellum, and in each the result of roentgen therapy was initially satisfactory. Although the histologic appearance suggested a high degree of malignancy, there was survival for seventeen years.

Arkansas Medical Society Journal, Fort Smith

43:257-284 (April) 1947

Tuberculosis Control Activities of the Arkansas State Board of Health. A. C. Curtis.—p. 257.
Consideration of Surgical Complications of Amebiasis of Colon and Rectum. D. B. Stough.—p. 261.
Trends in Tuberculosis Control Procedures. H. R. Edwards.—p. 270.

43:285-310 (May) 1947

Pituitary Ovarian Relationship. J. H Sanderlin and W. B. Harrell.—p. 285.
Rheumatic Fever in Childhood. S. Phillips.—p. 287.
Diagnosis of Acute Abdomen. G. E. Cannon.—p. 289.

Bull. of U. S. Army Med. Dept., Washington, D. C.

7:413-492 (May) 1947

Carcinoma of the Skin and Lip. E. B. Helwig and R. G. Brown.—p. 437.
Functional Urinary Frequency in the Soldier. K. B. Conger.—p. 441.
Neuropsychiatric Casualties in an Infantry Division. H. D. Nesmith.—p. 445.
*Treatment of Plantar Corns. J. R. Vasko.—p. 455.
Ventilation Rates of Sealed Aircraft Cabins. K. E. Penrod.—p. 460.
Coccidioidal Meningitis. *C. B. Whims.—p. 466.*

Plantar Corns.—Vasko says that plantar corns are frequently misdiagnosed as plantar calluses and sometimes as plantar warts. Plantar calluses and plantar corns may look alike, but the former are not tender while the corns are exquisitely so. The surest way to discover whether the callus conceals a corn or not is to pare off the top. Should a corn be present, one will encounter a small hard kernel like a rice body. A plantar wart is usually not surrounded by callus. Also a wart has the appearance of the cross section of a nerve and is usually moist and soft, whereas the corn is dry and hard. In the treatment advocated by Vasko the corns are trimmed of excess callus and the hard kernel in the center removed with a small, blunt, round ended knife. The skin underlying this kernel was always pink and rather tender. A subcutaneous injection of 1 cc. of 1 per cent procaine was then made into the base, and it was noticed that considerable pressure had to be used to force the procaine in. Apparently the skin on which the base of the corn rested was adherent to the fibrous element of the subcutaneous fat. The injection was quite uncomfortable for a moment, but after the ballooning of the tissue was accomplished the pain ceased. Painless walking was possible almost at once. In a few cases the relief was permanent, but in the majority some discomfort returned within a few days. The latter group received additional injections. To avoid disappointment in the treatment of verrucae and simple calluses, it is recommended that this treatment be used only on plantar corns.

Delaware State Medical Journal, Wilmington

19:41-58 (March) 1947

Diabetes Mellitus and Gallbladder Disease. E. M. J. Bohan.—p. 41.
Mesenteric Fibrosarcoma: Report of a Case. P. Alva and L. Vazquez.—p. 45.
Metastatic Carcinoma of the Lung Simulating Heart Failure. L. Vazquez.—p. 48.
Successful Immunization Procedures. G. J. Boines.—p. 50.

Endocrinology, Springfield, Ill.

40:231-298 (April) 1947

Interpretation of Estrogenic Assays. J. M. Curtis, J. J. Umberger and Lila F. Knudsen.—p. 231.
Imposition of Diurnal Ovulatory and Temperature Rhythms by Periodic Feeding of Hens Maintained Under Continuous Light. R. M. Fraps, B. H. Neher and I. Rothchild.—p. 241.
Effect of Pregnancy Complicated by Alloxan Diabetes on Fetuses of Dogs, Rabbits and Rats. H. C. Miller.—p. 251.
Effect of Thyroidectomy on the Conversion of Carotene to Vitamin A. V. A. Drill and A. P. Truant.—p. 259.
Regulation of Pituitary Adrenocorticotropic Activity During Response of Rat to Acute Stress. G. Sayers and Marion A. Sayers.—p. 265.
Role of Adrenal Cortex in Mammary Development and Its Relation to Mammogenic Action of Anterior Pituitary. A. T. Cowie and S. J. Folley.—p. 274.
Action in Vitro of Thyrotropic Hormone and Iodide on Thyroid Cells. L. C. Junqueira.—p. 286.

Gastroenterology, Baltimore

8:397-564 (April) 1947

*Giant Hypertrophic Gastritis. S. N. Maimon, J. P. Bartlett, Eleanor M. Humphreys and W. L. Palmer.—p. 397.
Effect of Vagotomy on Gastric Function. S. Wolf and W. DeWitt Andrus.—p. 429.
Rate of Healing of Gastric Ulcers. H. M. Pollard, W. H. Bachrach and M. Block.—p. 435.
Syndrome of Nontropical Sprue with Hitherto Undescribed Lesions of the Intestine. J. Schein.—p. 438.
Oral Cholecystography with Priodax: Correlation with Pathologic Findings. J. L. Jarvis and D. Cayer.—p. 461.
Preliminary Report on Protein Hydrolysate Therapy for Peptic Ulcer. S. T. Kimble Jr.—p. 467.
*Protein Hydrolysate Therapy for Peptic Ulcer. Report of 26 Cases. H. H. Hodges.—p. 476.
Nonreactive Aluminum Hydroxide in Treatment of Peptic Ulcer. F. H. Smith.—p. 494.
Complications Following War Wounds of Abdomen. M. A. McIver.—p. 504.
Treatment of War Wounds Involving Gastrointestinal Tract. R. M. Zollinger.—p. 512.
Primary Megacolon. J. M. Swarts.—p. 519.
Simplified Procedure for Determination of Pepsin and Trypsin Concentrations in Digestive Juices. M. H. F. Friedman.—p. 526.

Giant Hypertrophic Gastritis.—Six cases of giant hypertrophic gastritis, 2 with superimposed hyperplastic polyp formation, are described by Maimon and his co-workers. The difficulty in differentiating this condition from neoplasm is evident from the fact that all 6 were subjected to operation. The symptomatology is indefinite. Anatomically, roentgenologically and gastroscopically the resemblance of the gastric folds to the convolutions of the brain is striking and is perhaps the most salient feature. Microscopic examination reveals redundancy of the mucosa and hypertrophy of the glandular structures, with cyst formations and metaplasia to the intestinal type of epithelium. The pepsinogen and acid forming cells are replaced by the more primitive type. Fibroplasia with increase of connective tissue and edema were prominent features. In 2 cases redundancy was outstanding, while in 2 others hyperplasia and increased thickness of the mucosa were remarkable. Multiple polyps developed in 2 cases.

Protein Hydrolysate Therapy for Peptic Ulcer.—Hodges evaluates the effectiveness of the oral administration of a protein hydrolysate in the treatment of chronic peptic ulcer and makes observations pertaining to nutrition and metabolism in human subjects whose sole source of dietary nitrogen was predigested protein. Twenty-six patients have been selected for this study. Twenty-four had received adequate conventional dietary therapy previously without significant improvement or had suffered a recurrence of symptoms while adhering to such a program. The patients were treated with a protein hydrolysate-carbohydrate mixture for from two to three weeks. In the majority this treatment appeared more efficacious than a conventional dietary program in producing a remission, but the frequency of relapses was not diminished. Three patients failed to respond satisfactorily, one of these suffering a serious gastrointestinal hemorrhage in the midst of therapy. A gain in weight was the rule. A rise in blood urea nitrogen was seen in most of the patients, but the serum protein and hemoglobin changes were inconsistent. The degree of gastric acidity after treatment tended to be reduced. Individual feedings of this mixture completely neutralized free gastric acid for an average of seventy minutes. The beneficial effects of the protein hydrolysate are ascribed to its buffering action and to the high nitrogen intake. It is believed that the protein hydrolysate may become a useful adjunct to the medical management of peptic ulcer but will not prove to be a panacea.

Hawaii Medical Journal, Honolulu

6:221-296 (March-April) 1947

Pulmonary Resection for Tuberculosis. P. W. Gebauer.—p. 233.
Bronchoscopic Diagnosis in Nontuberculosis Chest Conditions. D. B. Radner—p. 236.
Immunologic Factor Involved in Case of Hemolytic Disease of Newborn. L. Welty.—p. 239.
Congenital Heart Disease. F. B. Schultz.—p. 241.

Journal of Bacteriology, Baltimore

53:381-508 (April) 1947. Partial Index

Comparative Action of Bromine and Iodine on Toxic Enzymes of Staphylococcus Aureus and Streptococcus Pyogenes. H. Farkas.—p. 401.
Relationship Between Lactobacillus Acidophilus (Moro) Holland and Lactobacillus Casei (Orla-Jensen) Holland. C. S. Pederson.—p. 407.
Growth of Clostridium Septicum and Its Inhibition. F. J. Ryan, Lillian K. Schneider and R. Ballentine.—p. 417.
Nutrition of Protozoa: Simplified Medium for Investigation of Unknown Factors in Blood Serum Essential for the Sustained Growth of Trichomonas Vaginalis. H. Sprince and A. B. Kupferberg.—p. 435.
Effect of Metabolites of Escherichia Coli on Growth of Coli-Aerogenes Bacteria. J. M. Coblentz and M. Levine.—p. 455.
Mechanism for Development of Resistance to Streptomycin and Penicillin. M. Klein.—p. 463.
Antagonism by Aerobacter Strains. E. S. Wynne.—p. 469.
Rapid Method for Staining of Rickettsia Orientalis. F. H. Diercks and R. O. Tibbs.—p. 479.
*Observations on In Vivo and In Vitro Development of Bacterial Resistance to Streptomycin. C. W. Price, W. A. Randall, V. L. Chandler and R. J. Reedy.—p. 481.
Studies on Hemolytic Streptococci: Differentiation of Species in Streptococci of Group A. Alice C. Evans.—p. 489.

Bacterial Resistance to Streptomycin.—Experiments made by Price and his associates revealed that different species of bacteria and different strains of the same species vary greatly in their in vitro resistance to streptomycin and streptothricin. Resistance of organisms to streptomycin was more readily induced than to streptothricin, and to a greater degree. Streptomycin-induced resistance of Eberthella typhosa is accompanied with changes in morphology. In order to make comparative studies of the sensitivities of organisms to streptomycin it is imperative to employ a broth of uniform hydrogen ion concentration containing the same constituents. Furthermore, it is imperative that in testing an organism for sensitivity to streptomycin it be tested in the same batch of broth in which its original sensitivity was determined. It would be well for laboratories to maintain a reference standard medium against which all subsequent batches of medium could be tested with an organism of previously established sensitivity. When rats are fed on a diet containing streptomycin there appear in a relatively short time in the feces of these animals large numbers of microorganisms which are extremely resistant to this antibiotic.

Journal of Clin. Endocrinology, Springfield, Ill.

7:1-78 (Jan.) 1947

Gonadotropic Hormone: Comparison of Ultrafiltration and Alcohol Precipitation Methods of Recovery from Urine. E. C. Jungck, W. O. Maddock and C. G. Heller.—p. 1.
Three Unusual Endocrinopathies with Associated Ovarian Pathology: I. Ovarian Agenesis. II. Precocious Puberty. III. Virilism. Minnie B. Goldberg, Alice F. Maxwell and Pearl M. Smith.—p. 11.
*Paroxysmal Hypertension with Concomitant Swelling of Thyroid Due to Pheochromocytoma of Right Adrenal Gland: Cure by Surgical Removal of Pheochromocytoma. J. Bauer and E. Belt.—p. 30.
Effect of Thiouracil Derivatives on Fetuses and Infants. E. Freiesleben and K. Kjerulf-Jensen.—p. 47.
Thyroid and Adrenal Interrelations, with Special Reference to Hypotrichosis Axillaris in Thyrotoxicosis. R. H. Williams.—p. 52.

Paroxysmal Hypertension.—Bauer and Belt report paroxysmal diffuse swelling of the thyroid accompanying and simultaneous with paroxysmal attacks of hypertension in a woman aged 47. The sudden swelling of the thyroid gland added to the usual signs and symptoms characteristic of the adrenal sympathetic syndrome reached its peak and faded away concurrently with the rise and fall of blood pressure in each hypertensive attack. There were extremely rapid and excessive variations in blood pressure, which usually are not associated with the syndrome. A tentative diagnosis of chromaffin tumor was made and corroborated by the finding that paroxysmal hyperglycemia accompanied the attacks. The diagnosis was established when the supposed tumor was visualized in the x-ray plate by perirenal insufflation A cure was affected by the surgical removal of the tumor under spinal anesthesia Microscopic examination of the specimen revealed a cystic pheochromocytoma of the adrenal gland

Journal of Experimental Medicine, New York

85:329-440 (April) 1947 Partial Index

*Mode of Action of Streptomycin on Type b Hemophilus Influenzae. Hattie E Alexander and Grace Leidy —p 329

Normal Structure and Degenerative Changes of Cytoplasm of Liver Cells and Tumor Cells Derived from Them E L Opie —p 339

Effect of Ultraviolet Irradiation on Various Properties of Influenza Viruses W Henle and Gertrude Henle —p 347

Impairment of Antibody Response in Pyridoxine Deficient Rats H C. Stoerk, H N Eisen and Hedda M John —p 365

Studies on Glycogen Nephrosis in Alloxan Treated Diabetic Rats G W. Curtis, S L Robbins and I Glickman —p 373.

Manometric Method for Measuring Activity of Clostridium Welchii Lecithinase and Description of Certain Properties of This Enzyme. P C Zamecnik, Lydia E Brewster and F Lipmann —p 381.

Epidemic Diarrheal Disease of Suckling Mice I Manifestations, Epidemiology and Attempts to Transmit Disease F S Cheever and J H Mueller —p 405

Relation of Size of Inoculum and Age of Infection to the Curative Dose of Penicillin in Experimental Syphilis, with Particular Reference to Feasibility of Its Prophylactic Use H Eagle, H. J Magnuson and R Fleischman —p 423.

Action of Streptomycin on Type b Hemophilus Influenzae.—Alexander and Leidy found that of 14 patients treated with streptomycin alone 10 recovered promptly; in 3 of the 4 remaining cases failure was proved to be due to emergence of resistance of the organisms to streptomycin The rapid development of resistance to 1,000 units of streptomycin per cubic centimeter during treatment argues against metabolic adaptation of the bacteria Study of large samples of initial bacterial populations shows resistant members in all ten strains examined. The proportion of resistant members is not significantly higher before treatment in patients who do poorly than in those who respond promptly The results indicate that emergence of resistance is the result of a selective process, after elimination of sensitive members the very few resistant ones, apparently present in all strains, make up most or all of the population in the cultures taken after commencement of treatment. The survival of organisms which can grow in high concentrations of streptomycin, either in patients or in vitro, is influenced more by the size of the bacterial population than by any other known factor Since the bacterial population is relatively small in patients with mild or moderately severe infections, the likelihood of a significant number of highly resistant members being present is remote

Journal of Immunology, Baltimore

55:309-412 (April) 1947

Studies on Botulinum Toxoids, Types A and B III Immunization of Man H R Reames, P J Kadull, R D Housewright and J B Wilson —p 309

Quantitative Estimation of Egg and Chicken Proteins in Equine Encephalomyelitis Vaccines L L Engel and R Randall —p 325

Relations Between Equine Encephalomyelitis Virus (Eastern Type) and Normal Host Cellular Constituents L L Engel and R Randall —p 331

Quantitative Study of Arthus Phenomenon Induced Passively in the Rabbit E L Fischel and E A Kabat —p 337

Effect of Metabolites, Metabolite Antagonists and Enzyme Inhibitors on Growth of Vaccinia Virus in Maitland Type of Tissue Cultures R L Thompson —p 345

*Complement Fixing Antibodies of Lymphogranuloma Venereum in Mice Their Development and Response to Sulfonamide Therapy. M J. Wall —p 353

Dysentery. A Progress Report for the Years 1942 to 1946 A J. Weil —p 363

Antibodies of Lymphogranuloma Venereum.—Wall studied the development of complement fixing antibodies in mice following infection with the virus of lymphogranuloma venereum. Antibody was always demonstrable at the end of two weeks after inoculation A peak in titer was reached three to five weeks after infection A high titer persisted throughout the eighteen week period of observation Virus could be recovered from the brains of the animals at any time after the appearance of signs of illness and throughout the period of recovery The sulfonamides are effective in the treatment of lymphogranuloma venereum, but animals treated with sulfonamides from the time of inoculation for a period of several weeks gave negative tests for antibodies at the end of this time In mice treated after the infection had been established, titers of antibody were lower than in control animals and a relationship was found between the end titer and the duration of therapy. When therapy was continued for several weeks, the antibodies disappeared completely Virus could still be recovered from the tissues of these animals, but the ease with which it was isolated depended on the program of chemotherapy

Journal of Investigative Dermatology, Baltimore

8:183-226 (April) 1947

Treatment of Mycosis Fungoides with Nitrogen Mustard H H Henstell and J. N Tober.—p 183

Method for Protection of Patients with Solar Urticaria L Rubin, P L. Beal and S Rothman —p 189.

Somatopsychic Medicine. C H. Campbell —p. 191.

Treatment of Penile Condylomata Acuminata with Podophyllin Observations on Prevention of Balanitis T H Finkle and E J. Frishwasser —p 199

Photosensitization in the Treatment of Psoriasis E Epstein —p. 203.

Penicillin Ointments Study of Effect of Ointment Ingredients on Stability of Penicillin T. J. Macek, W C Gakenheimer and P. J. Daughenbaugh —p 209.

Exudative Discoid and Lichenoid Chronic Dermatosis (Sulzberger Garbe): Histopathologic Study W. Sachs and N. Kirsch —p 215.

Polyethylene Glycol Vehicles in Dermatology M T.-R. Maynard —p. 223.

Journal of Lab. and Clinical Medicine, St. Louis

32:349-474 (April) 1947 Partial Index

Rapid Identification of Shigella in Public Health Laboratory. W. W. Ferguson, Mary Branston, Grace L McCallum and Margaret J. Carlson —p 349

*Serologic Response in Murine Typhus as Measured by Weil Felix, Rickettsial Complement Fixation and Rickettsial Agglutination Reaction C T Nelson —p 360

Influenza B in Needham, Mass, December 1945 Serologic Studies in Cases and in Family Contacts M Finland, Mildred W. Barnes, M Meades, E M Ory and A D Rubenstein —p 367.

Effect of Antihistamine Drugs on Serum Induced Myocarditis in Rabbits. F A Kyser, J C McCarter and J Stengle —p 379.

Evidence for Activity of Second Member of Vitamin M Group (Fermentation Factor) in Sprue Case Report E Jones, H F Warden and W J Darby —p 387

*Thiouracil and Propylthiouracil Comparative Clinical Study W. H. Beierwaltes and C C Sturgis —p 392

Observations on Diurnal Excretion of Urobilinogen in Urine of Normal Subjects and Patients with Laennec's Cirrhosis E Pellegrino, A. J. Patek Jr, Ann Colcher and Beatrice Domanski —p 397

Comparison of Nutritive Value of Proteins in Mixed Diets for Dogs, Rats and Human Beings D M Hegsted, Virginia Kent, A G Tsongas and F J Stare —p 403

Prothrombin Time Studies on Human Beings and Experimental Animals G A Nitshe Jr, H W Gerarde and H F Deutsch —p 410

Two Popular Fallacies Regarding Rh Preliminary Report of Some Thought Provoking Observations P H Hattersley —p 423

Serologic Response in Murine Typhus.—The studies reported by Nelson were undertaken primarily to investigate the course of antibody development in patients with murine typhus by comparing the results of the Weil-Felix test with the specific rickettsial agglutination and complement fixation reactions It was hoped that in this way it might be possible to evaluate more clearly the relative usefulness of the murine rickettsial agglutination and complement fixation tests in the early diagnosis of the disease Multiple samples of blood serum were collected over a period of several weeks from patients with clinical evidence of typhus infection. Almost all these patients were residents of communities in the Southeasten United States where murine typhus is endemic The serologic response in 22 cases of murine typhus has shown that the Weil-Felix and rickettsial agglutination reactions usually become positive earlier than the rickettsial complement fixation test in this disease As far as the detection of murine typhus in its acute stages in man is concerned, the relatively simple rickettsial slide agglutination test is fully as effective as the more elaborate complement fixation reaction

Comparison of Thiouracil and Propylthiouracil.—A statistical comparison of 98 thyrotoxic patients treated with 0.6 Gm. of thiouracil per day and 42 treated with 0 15 Gm of propylthiouracil per day revealed practically identical effectiveness of the two drugs in these doses The incidence of toxic reactions with propylthiouracil is much less than with thiouracil Severe toxic reactions might be encountered if the present dosage of propylthiouracil is significantly increased The available data indicate that 150 mg is probably the most satisfactory maximum dosage of propylthiouracil

Journal of Pediatrics, St. Louis

30:371-484 (April) 1947

Thiouracil in Childhood Hyperthyroidism I P Williams and I R Janney —p 371
*Infectious Hepatitis in Childhood Report of Institutional Outbreaks and Comparison of Disease in Adults and Children Dorothy M Horstmann W P Havens Jr and Joyce Deutsch —p 381
*Hypercalcemia and Chief-Cell Hyperplasia of the Parathyroid Glands in Infant E L Pratt Betty B Geren and E B D Neuhauser —p 388
Bone Marrow Infusion in Childhood Experiences from 1,000 Infusions S Heinild T Sondergaard and F Tudvad —p 400
Estimation of Extracellular and Total Body Water in Newborn Human Infant with Radioactive Sodium and Deuterium Oxide L B Flexner W S Wilde N K Proctor, D B Cowie, G J Vosburgh and L M Hellman —p 413
Renal Glycosuria Associated with Pentosuria I Dunsky and Grace Lawrence —p 416
Poisoning Due to Ingestion of Wax Crayons Report of Case J A Jones and H Bucker —p 422
Double Aortic Arch Susanna Gordon —p 428
Acute Meningococcemia J K Sweet H J Dowling and M Jane Howell —p 438
*Comparative Effect of Parenteral Administration of Single Massive Doses of Vitamin D in Oil-Ether Vehicle H Vollmer and B L Oser —p 446
Capillary Fragility and Menses in Rheumatic Girls E L Brown and Valentina P Wasson —p 455

Infectious Hepatitis in Childhood —Horstmann and her associates describe two epidemics of infectious hepatitis in children In one, 53 cases of hepatitis with jaundice occurred along with 56 cases of questionable hepatitis without icterus In the other institution 68 patients developed hepatitis with jaundice, of these 44 were children In all of the juvenile patients the disease was mild and of relatively short duration as compared with the disease in adults The difference between the severity of infectious hepatitis in children and in adults is comparable to the difference which exists between the childhood and adult forms of the more common virus infections Measles mumps and chickenpox are all likely to be more severe and attended with more severe complications in the adult than in the child The authors deplore that the mildness of infectious hepatitis in children has tended to cause the disease to be belittled There is no evidence that such mild cases are less dangerous to the community from the infectious point of view than are the more severe adult cases

Hypercalcemia and Hyperplasia of Parathyroid in Infant —Pratt and his associates present clinical and laboratory investigations on an infant aged 10 months exhibiting extreme hypercalcemia mild acidosis impairment of renal functions and low urinary excretion of calcium The postmortem examination revealed chief cell hyperplasia of all four parathyroid glands, nephrocalcinosis and osteitis fibrosa The apparently unique combination of hypercalcemia and chief cell hyperplasia of the parathyroids was not satisfactorily explained

Parenteral Administration of Vitamin D —Vollmer and his co workers describe experiments on rats which were carried out to determine the comparative therapeutic and prophylactic effect of a single massive dose of vitamin D_2 administered orally in oil, intramuscularly in oil and intramuscularly in oil-ether solution The superiority of the oil ether injection and the oil injection over the oral doses was statistically significant The superiority of the parenteral vitamin D administration in an oil ether vehicle in the therapeutic as well as the prophylactic experiments seems to indicate quick absorption and satisfactory retention of the vitamin administered by this method The inferiority of the parenteral administration of vitamin D_2 in oil in the therapeutic experiments may be ascribed to a delayed vitamin D absorption from the oily deposit in the tissues The inferiority of the oral administration of vitamin D_2 in oil in the prophylactic experiments may be explained by incomplete absorption of massive doses from the gastrointestinal tract and loss of vitamin D with the feces If observations in animals are applicable to infants and children, one may expect that intramuscular injection of a single massive dose of vitamin D_2 in an oil-ether vehicle will cure rickets at least as promptly as other methods of administration and is at least equivalent to the other methods in its prophylactic effect, giving complete protection against rickets for at least three months

Michigan State Medical Society Journal, Lansing

46:377-488 (April) 1947

The Physician and the State K Sigler —p 425
Operation of Public Law 725 Hospital Survey and Construction Act H E Hilleboe —p 428
Modern Influences in Medical Practice T P Murdock —p 431
Cardiac Complaints and Chronic Nonspecific Prostatitis J A Winter. —p 433
*Treatment of Hyperthyroidism Present Status G Crile Jr —p 437
Paralysis of Larynx L H Clerf —p 441
Determination of Unmet Need for Medical Attention Among Michigan Farm Families C R Hoffer and D A Schuler, in cooperation with Rosalie Neligh and E Robinson —p 443
Functional Bleeding at Different Age Periods Significance and Management E Novak —p 447
Functional Hyperinsulinism Common and Well Defined Clinical Entity Amenable to Medical Management J W Conn —p 451

Treatment of Hyperthyroidism.—Crile thinks that the disappointment felt by the profession in thiouracil and thiobarbital has prejudiced many physicians against the antithyroid drugs and has led them to regard with suspicion the more recently developed thiouracil derivatives This suspicion is poorly founded because propylthiouracil has proved safe and effective It accomplishes a physiologic rather than an anatomic thyroidectomy, and the mechanism by which it produces a remission is comparable in many respects to that of thyroidectomy Propylthiouracil is the treatment of choice for diffuse goiter with hyperthyroidism Thyroidectomy is seldom indicated Because adenomatous goiters are tumors of the thyroid and because tumors are potentially dangerous thyroidectomy is still the treatment of choice for most nodular goiters of significant size The majority of patients with nodular goiters and mild hyperthyroidism are best prepared for operation with iodine Propylthiouracil is used in the preoperative preparation of patients with severe hyperthyroidism of patients over 50 and of patients with complications increasing the risk of operation Nodular goiter with hyperthyroidism occurring in aging patients or in patients with short life expectancy can be successfully and definitively treated with propylthiouracil

New England Journal of Medicine, Boston

236:523 554 (April 10) 1947

Use of Curare in Anesthesia E C Allen and E H Eversole —p 523
Experiences with Curare in Anesthesia S C Siggin P E Schultz and P Saunders —p 526
Carcinoma of Breast Review of First Three Years' Experience in Cancer Section of Westfield State Sanatorium F S Hopkins and N Egnatz —p 530
*Multiple Congenital Defects Following Maternal Varicella Report of a Case E G Laforet and C I Lynch Jr —p 534
Effects of Protein Deficiency on the Pregnant Woman and Fetus and on the Infant and Child H C Stuart —p 537
Basal Cell Papilloma of Bronchus with Cornification —p 542
Carcinoma of Common Bile Duct —p 545

236:555 610 (April 17) 1947

The Value of Imponderables R Fitz —p 555
The Hospital—Look Ahead Some Aspects of Clinical Investigation G R Minot —p 563
Atelectasis as a Factor in the Medical Treatment of Pleural Empyema Necessity of Combating Atelectasis by Remedial Breathing Exercises F G Fleischner —p 566
Electrocardiography L B Ellis —p 572
Ewing Tumor of Fibula —p 599
Acute and Chronic Salpingo Oophoritis Placental Polyp —p 601

Congenital Defects Following Maternal Varicella —Laforet and Lynch report that in an infant whose mother had varicella during the eighth week of pregnancy the following multiple congenital defects were present talipes equinovarus on the right side, paralysis and muscular atrophy of the right lower extremity, defective development of the toes of the right foot, cortical atrophy, hypoplasia or aplasia of the cerebellum, bilateral optic atrophy, pilonidal sinus, torticollis to the right, cicatricial lesions of the skin of the left lower extremity, undescended testis on the left and insufficiency of the anal and vesical sphincters. The episode of maternal varicella was well authenticated. Reviewing the present opinion on the pathogenesis of anomalies associated with maternal antepartum virus infection, the authors emphasize the possible teratogenic propensities of maternal virus diseases occurring early in pregnancy.

New Orleans Medical and Surgical Journal

99:485-544 (April) 1947

Socialized Medicine. F. P. Rizzo.—p. 485.
*Ligation of the Vena Cava: Critical Evaluation Based on a Study of 22 Cases. C. G. Collins, E. W. Nelson, J. R. Jones and others. —p. 488.
The Unstable Colon: Its Role as Precursor to Diverticulosis. E. A. Schexnayder.—p. 496.
Actinomycosis: Report of 12 Cases, with Special Reference to a Mediastinal Case. W. J. Hollis and M. D. Hargrove.—p. 499.
Multiple Operative Procedures in Case of von Recklinghausen's Disease. J. P. Woodhall and D. H. Echols.—p. 507.
Traumatic Rupture of the Pancreas: Case Report. G. McHardy, D. C. Browne and G. Welch.—p. 511.
Evaluation of Psychogenic Factor in Peptic Ulcer. S. J. Orloff.—p. 513.

Ligation of Vena Cava.—Collins and his associates say that ligation of the inferior vena cava and the ovarian veins has been done in 22 cases at Tulane University School of Medicine. They stress that ligation of the vena cava carries a low operative mortality. The end results and the appearance and function of the patients' extremities are good. The procedure is indicated in cases of phlebothrombosis of the iliac vessels whether the clotting process occurs preoperatively or postoperatively. It is also indicated in cases of postabortal and postpartal puerperal sepsis if conservative therapy is ineffective, if infarction to the lung develops or if the patient has an infarct to the lung from a suppurative pelvic thrombophlebitis when first seen. The minimal amount of edema and circulatory disturbance occasioned by vena cava ligation in the reviewed cases is due to the fact that at the time of operation the sympathetic chains are sectioned; if this is not possible at operation routine blocking of the lumbar sympathetics is performed, bilaterally, daily, for five or six days after operation.

New York State Journal of Medicine, New York

47:929-1056 (May 1) 1947

Pilonidal (Sacrococcygeal) Cyst and Sinus: Evaluation of Some Recently Proposed Therapeutic Measures. R. Turell.—p. 977.
Use of Medicament to Reduce Appetite in Treatment of Obesity and Other Conditions. W. L. Gould.—p. 981.
*Office Procedure in Applying Penicillin Therapy to Acute Suppurative Bartholinitis. M. A. Goldberger and L. S. Lapid.—p. 984.
Pathogenesis of Spina Bifida and Related Congenital Malformations. A. S. Wiener.—p. 985.
*Symptomatic Treatment of Hay Fever with Diaminobenzopyridyl Hydrochloride (N'-Pyridyl-N'-Benzyl-N-Dimethylethylenediamine Hydrochloride), (Pyribenzamine). H. Leibowitz, I. M. Kurtz and E. Schwartz. —p. 989.
Nitrogen Mustards and Application in Neoplastic Diseases. D. A. Karnofsky.—p. 992.
Pentothal Nitrous Oxide-Oxygen Anesthesia. E. H. Bachrach.—p. 994.
Coexistence of Malformations of Genital and Urinary Tracts in Women. W. T. Pommerenke and J. A. Benjamin.—p. 996.
Amphetamine Sulfate (Benzedrine) in Treatment of Obesity: Critical Estimate. H. B. Richardson.—p. 998.
Benzedrine Sulfate in Elderly People. W. Caveness.—p. 1003.

Office Procedure for Penicillin Therapy of Suppurative Bartholinitis.—Goldberger and Lapid aspirate the suppurating Bartholin abscess and inject penicillin directly into the cavity. Three patients so treated all complained of an exquisitely tender local vulvar mass, extreme difficulty in walking and sitting and generalized discomfort. They all experienced immediate relief. One of the 3 patients had to be reaspirated twenty-four hours after the initial procedure because of the reaccumulation of pus in the cavity; this patient received 100,000 units of penicillin. The other 2 patients received 200,000 units of penicillin in one injection. With this procedure patients are not subjected to a minor operative procedure of incision and drainage with its postoperative care and longer reparative process. Within forty-eight hours there is no evidence of an inflammatory process.

Pyribenzamine in Treatment of Hay Fever.—Leibowitz and his associates review observations on the use of pyribenzamine hydrochloride in patients with hay fever due to ragweed. Of 86 patients 21 were treated with pyribenzamine alone, 47 with desensitization and pyribenzamine, and 18 with ragweed desensitization alone. The majority of patients obtaining relief from pyribenzamine, either alone or in conjunction with ragweed desensitization, required only two tablets a day. Side reactions occurred in 25 of the 68 patients receiving pyribenzamine. These effects disappeared gradually while the drug was still being administered. Pyribenzamine did not affect the blood count. The highest percentage of relief was obtained when pyribenzamine was administered together with ragweed desensitization (35 of 47). Pyribenzamine alone produced relief in 9 out of 21 cases. Ragweed desensitization alone relieved 10 out of 18 cases.

North Carolina Medical Journal, Winston-Salem

8:191-266 (April) 1947

*Spherocytosis and Increased Erythrocyte Fragility in Four Generations of Family of Patient with Congenital Hemolytic Anemia. C. N. Herndon and J. B. Alexander.—p. 196.
Amebiasis: Case Reports from North Carolina Baptist Hospital. J. W. Abernethy and D. Cayer.—p. 201.
Peptic Ulcer of Duodenum: Review of 98 Cases Treated Surgically. H. H. Bradshaw and F. Hightower.—p. 204.
Treatment of Meningitis in Childhood, with Particular Reference to Use of Penicillin and Streptomycin. R. B. Lawson and W. M. Kelsey. —p. 211.
Regional Enteritis, with Observations Concerning Its Pathogenesis. R. P. Morehead.—p. 216.
*Use of BAL in Treatment of Heavy Metal Poisoning. C. R. Welfare. —p. 219.
Special Disabilities in Children with Organic Brain Pathology. L. J. Thompson.—p. 224.
Basis for Therapy in Shock. H. D. Green.—p. 228.
Renal Tumors. C. M. Norfleet Jr.—p. 236.

Hemolytic Anemia.—Herndon and Alexander studied the family of a woman aged 39 with congenital hemolytic anemia. Determinations of the hemoglobin red cell count, erythrocyte fragility tests and wet smear examinations for spherocytes were performed on 15 relatives in four generations. Six of these relatives presented definite laboratory evidence of defective erythrocytes, only 1 of them gave a history of jaundice, and the remaining 5 were reported to be in good health. Determinations were made of the blood groups, blood types and Rh factor in 16 members of the family and of the taste reaction to phenyl-thio-carbamide in 12 members of the family. Although this series is too small to be of significance in linkage calculations, the data are presented in the hope that additional similar data may become available. It is suggested that congenital hemolytic anemia is due to the action of a simple dominant gene, with variable expressivity. Emphasis is put on the fact that history alone is entirely unreliable in classifying relatives of a patient with congenital hemolytic anemia as normal or affected. The variability in the clinical picture is so great that accurate hematologic examination is necessary for proper classification of even apparently normal relatives.

BAL in Heavy Metal Poisoning.—According to Welfare there is evidence that arsenic produces intoxication in man and animals by depressing intracellular tissue respiration. It produces this depression by attaching itself to sulfhydryl radicals of enzymes responsible for the metabolism of fats and carbohydrates, thus interfering with the function of these enzyme systems. British Anti-Lewisite (BAL), a dithiol (2,3-dimercaptopropanol), by supplying more readily available sulfhydryl groups, is able to remove arsenic from the enzyme systems and thereby reactivate tissue respiration. BAL is a potent antidote for poisoning by other heavy metals such as mercury producing toxic effects in a manner similar to that of arsenic, and BAL is probably useful in the treatment of poisoning by bismuth, gold and antimony. On the basis of animal experiments it would appear that BAL is contraindicated in cases of poisoning by lead, thallium and selenium. While best results in heavy metal poisoning are obtained by early treatment with BAL, the compound was also effective when treatment was started three weeks after the appearance of erythema with a scaling eczematoid process and edema in a pregnant woman aged 39 with syphilis to whom mapharsen had been given; complete recovery resulted from the administration of a total dose of 3,750 mg. of BAL.

Philippine Medical Association Journal, Manila

22:449-510 (Nov) 1946

Transurethral Resection in Treatment for Prostatic Median Bar J J Torres Jr and P Morales —p 449
Management of Prolapse of Uterus C Manahan and J Coronado —p 453
Epidermoid Carcinoma of Vulva Radical Vulvectomy M C [illegible] —p 457
*Is Hypoproteinemia the Cause of the Toxemias of Pregnancy? H Acosta Sison and A Infantado —p 4[illegible]

Hypoproteinemia and Toxemias of Pregnancy.—Acosta-Sison and Infantado determined the serum protein values of 168 consecutive obstetric cases to ascertain the incidence of hypoproteinemia also the correlation between hypoproteinemia and edema hypertension and albuminuria They stress that there is a high correlation between hypovitaminosis and hypoproteinemia Though there is high correlation between edema and hypoproteinemia still there are cases with edema which do not show hypoproteinemia, and many cases of hypoproteinemia are without edema There is no correlation between hypertension and hypoproteinemia Though nearly half the cases of preeclampsia and eclampsia show hypoproteinemia it is probably not the cause of preeclampsia and eclampsia Rather they are the result of the toxic condition present For if hypoproteinemia were the cause, there would be a high incidence of these toxemias in hypovitaminosis, beriberi or hydatidiform mole in all of which the incidence of hypoproteinemia is high

Psychosomatic Medicine, Baltimore

9:77-150 (March April) 1947

*Psychologic Invalidism in Thyroidectomized Patients J Ruesch Carole Christiansen L C Patterson and [illegible] —p 77
Psychosomatic Medicine Somatization Reactions W C Menninger —p 92
Brief Psychotherapy in Psychosomatic Problems R R Grinker —p 98
*Ill Health as an Expression of Anxiety in a Combat Unit R Kaufman —p 104
Central Angiospastic Retinopathy Psychosomatic Study of Its Occurrence in Military Personnel M A Zeligs —p 110
*Phantom Limb J R Ewalt, G C Randall and H Morris —p 118

Psychologic Invalidism in Thyroidectomized Patients.—Ruesch and his associates review the results of personality study on 43 patients who had been subjected to subtotal thyroidectomy and were selected from the material of the thyroid clinic of the University of California Hospital in such a manner as to constitute a fair representation of the several thousand patients followed in the clinic The authors believe that patients who are afflicted with thyroid disease are not entirely normal as far as sociopsychologic aspects are concerned The group divides into two distinct entities the normal or almost normal girl and the hysterical or anxiety type While surgical procedures are tolerated exceedingly well by the normal girls, delayed recovery is almost a probability in anxiety types and hysterical characters In men the problem is similar, but instead of hysterical personalities one deals with dependent individuals In preparation for surgery, psychiatric interviews might be helpful in spotting personality deviations of the anxiety, hysterical or dependent type Therapeutic interviews before and after operation might improve the chances of recovery of patients with personality disorders

Phantom Limb—The report presented by Ewalt and his associates is based on observations on amputees during their stay in an army general hospital Of a series of 2,284 patients with amputations, 404 had detailed psychiatric study Phantom sensation has been found to occur in practically all individuals who are studied carefully Spontaneous complaints of pain were rather rare among the group The patients complaining of phantom pain were persons who had psychopathologic manifestations complicating the orthopedic picture The authors gained the impression that phantom pain is merely the interpretation of a phantom sensation by certain psychopathologic persons Two cases are reported which support this view In both the pain tended to come and go with psychopathologic symptoms irrespective of what type of external treatment was carried on

Public Health Reports, Washington, D. C.

62:565 595 (April 18) 1947

*Improved Method of Producing Smallpox Vaccine of Low Bacterial Content D H Ducor —p 565

Improved Method of Producing Smallpox Vaccine—Ducor of the Laboratories of the Michigan Department of Health presents an improved method for the manufacture of smallpox vaccine of low bacterial content Rigid attention to the details of sanitation during the quarantine and handling of animals together with the treatment of operative surfaces with Roccal solution constitute the improvements With these improvements it is possible to eliminate the long storage period otherwise required for the destruction of bacterial contaminants in the vaccine Roccal which is a quaternary ammonium compound is compared with brilliant green as a germicide These germicides are applied to the skin surface of the operative field Roccal was found to be a more efficient germicide with no demonstrable effect on the virus

Radiology, Syracuse, N. Y.

48:319-440 (April) 1947

Reasons for the Common Anatomic Location of Pulmonary Tuberculosis W Dock —p 319
Roentgen Findings in Early Coccidioidomycosis H W Jamison and R A Carter —p 323
Pulmonary Sarcoidosis Early Roentgen Findings L H Garland —p 333
*Roentgen Therapy in Hodgkin's Disease T B Merner and K W Stenstrom —p 355
Early Effects of X Rays on the Ovaries of Rat L Halberstaedter and M Ickowicz —p 369
Roentgenkymographic Study of Heart in Myasthenia Gravis R C Batt —p 374
Roentgen Findings in Torulosis Report of 4 Cases R R Greening and L J Menville —p 381
Study of 24 615 Separation Chest Roentgenograms B J O Loughlin —p 389
Aortic Aneurysm Secondary to Coarctation Report of a Case Showing Calcification S B Clark and L C Koenig —p 392
Problems of Acquired Radioresistance of Cancer Adaptation of Tumor Cells F Windholz —p 398

Roentgen Therapy in Hodgkin's Disease—Merner and Stenstrom review observations on 185 patients in whom Hodgkin's disease had been proved by biopsy Multiple areas are involved by Hodgkin's disease throughout the body, but the peripheral lymph nodes are most frequently affected, followed by mediastinal nodes, abdominal nodes, spleen and bones The disease is most common in the third decade, and about two thirds of the patients are males The authors believe that the method of irradiation developed at the University of Minnesota Hospitals is highly efficient in the treatment of the lymphoblastomas Treatment is considerably more intensive than in most series reported A full course of therapy is applied to each area of involvement the dosage varying between 1,000 and 2,000 tissue roentgens over a period of fourteen days Large masses are treated more intensively, and the group of enlarged nodes causing the greatest distress is treated first The five year survival rate was 21 per cent and the ten year rate 8 per cent Other statistics have also been presented, demonstrating the increase in the survival period from the onset of symptoms in treated cases as compared with a series of untreated cases of lymphoblastoma reported by Minot in 1926 The unpredictable nature of Hodgkin's disease is recognized and claims of cure cannot be made Roentgen therapy has greatly increased the survival rate

Rhode Island Medical Journal, Providence

30:165-240 (March) 1947

Heart Disease and Employment L J Goldwater —p 179
Residency and Fellowship Program at R I Hospital Introduction A M Burgess —p 182
Comparison of Volumes of Blood Plasma and Circulating Cells in Secondary Polycythemia and in Severe Anemia W J H Fischer Jr —p 185
Case of Corneal Ulcer Treated with Penicillin Solution R R Chace —p 187
Our Latest Endeavor—Microfilming Elizabeth Bingham —p 212
Hospitals in Postwar World C R Metcalf, R W Tuttle and R W. Robinson —p 224

30:241 324 (April) 1947

Xeroderma Pigmentosum F Ronchese —p 255
Medicine in the Time of the Crusades R Hammond —p 258
Water Pollution Control A D Weston —p 263

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

16:163-232 (Jan.) 1947

*Penicillin in Treatment of Infections in Nasal Passages and Sinuses. R. E. Dunn.—p. 163.
Nature of Pilonidal Sinus. E. S. J. King.—p. 182.
Drainage in Infected Cavernous Sinus Thrombosis. W. A. Fairclough.—p. 193.
Preliminary Note on Study of Postoperative Thrombosis, with Special Reference to Prethrombotic State. H. Cummine.—p. 197.
Intrathoracic Neurogenic Neoplasms, with Report of 4 Cases. M. P. Susman.—p. 200.
Bronchoscopy in Postoperative Pulmonary Complications. H. B. Harwood.—p. 206.

Penicillin in Nasal Infections.—Dunn presents an account of an attempt to treat infective conditions of the nose and accessory sinuses with penicillin. The selection of cases depended on the presence of a penicillin sensitive organism in the antral washes or nasal discharge, while the methods of administration were determined by the most efficacious means of delivering penicillin to the regions involved. Administration was local, intramuscular or oral or a combination of these methods. The majority of patients treated with penicillin claimed relief from symptoms and showed improvement on x-ray examination. The greater proportion of these would have responded to ordinary conservative treatment. Three patients from whose antral washes a pure penicillin sensitive organism was grown before treatment grew a culture of Bacillus pyocyaneus after prolonged penicillin treatment. Three patients developed a rash in the vicinity of the nasal vestibule, which cleared after the cessation of penicillin treatment. Penicillin counteracted secondary infection of the nasal passages following a common cold. In sinusitis only x-ray investigation can decide which method of applying penicillin would be most efficacious. Penicillin, helpful in the treatment of acute and subacute exacerbations, cannot produce permanent relief in the presence of gross chronic infective mucosal changes; nor can patients with antro-oral fistula, foreign body in the antrum or conditions producing stasis in the nasal passages or accessory sinuses hope for freedom from recurrence of infection if penicillin treatment alone is undertaken.

British Journal of Urology, London

19:1-60 (March) 1947

Abacterial Pyuria from New Angle. G. H. Baines.—p. 6.
Retrocaval Ureter, with Description of an Operation Case Complicated by Ureteric Calculus. J. N. Young.—p. 22.
Pyelographic Test for Renal Fixity During Respiration. F. Martino Savino.—p. 29.
Reiter's Disease Followed by True Infective Abacterial Pyuria. A. E. Goldstein.—p. 32.

British Medical Journal, London

1:517-552 (April 19) 1947

Louis Pasteur. A. Fleming.—p. 517.
Effects of Certain Diets on Loss of Nitrogen in Urine After Experimental Burns. E. A. Sellers and C. H. Best.—p. 522.
Rations and Nutritional Needs. E. R. Bransby and H. E. Magee.—p. 525.
Simple Formula for Calculation of Atmospheric Dryness. R. L. Wynne.—p. 528.
Traumatic Uremia: Recovery. J. C. Scott and C. G. Rob.—p. 529.
*Massive Penicillin Doses in General Practice. D. P. Wheatley.—p. 530.

Massive Doses of Penicillin in General Practice.—Wheatley cites histories of 7 patients with conditions commonly encountered in general practice who responded well to large daily doses of penicillin. The first patient was a woman who had been troubled for some time with recurrent and severe boils in the nose. The usual duration of one of these was one to two weeks. When she consulted the author she had a full blown and painful boil just inside her nose. She was given 200,000 units of penicillin by intramuscular injection, this being repeated the following day. The next day the boil had almost completely subsided. The other patients had whitlow, carbuncles or purulent conjunctivitis. Carbuncles cleared up in about five days and the patients were fit for work within a week. In none of the patients was local treatment given after penicillin therapy was started. The 1 patient who was given penicillin twice daily fared no better than the others who received only one daily dose.

1:553-584 (April 26) 1947

*Vitamin A in Infective Hepatitis. A. D. Harris and T. Moore.—p. 553.
Tuberculous Pericarditis. H. Kopelman.—p. 559.
Medullary Suprarenal Chromaffinoma Producing Malignant Hypertension. D. Gutmann.—p. 563.
Case of Pheochromocytoma. J. M. K. Spalding.—p. 564.
Seminal Fluid Acid Phosphatase in Sterility. G. E. Delory.—p. 566.

Vitamin A in Infective Hepatitis.—In preliminary experiments defective dark adaptation was used as an indication of vitamin A abnormality. Chemical methods were used in investigation made on 32 military patients, of whom 30 had infective hepatitis and 2 jaundice following arsenotherapy. Harris and Moore stress that in the early stages of infective hepatitis the vitamin A content of the plasmas was often low. In estimations by the antimony trichloride method, values of 30 international units per hundred cubic centimeters or less were sometimes observed, as compared with an average of 118 international units for normal subjects. The low plasma vitamin A seems an adequate cause of the impairment of dark adaptation in this disease. The plasma vitamin A increased during convalescence. Variations in the carotenoid content of the plasma were similar to those found for vitamin A, but the return to normal was less rapid. The changes in plasma vitamin A and carotenoids went roughly parallel with the prothrombin value and with hippuric acid tolerance and moved in an opposite direction to the plasma bilirubin. In "absorption tests" with massive doses of vitamin A it was found that in the early stages of infective hepatitis substantial amounts of vitamin A were excreted in the feces, and sometimes there were traces in the urine. Excretion was not found in normal subjects given the same doses or in the same patients during convalescence. In some cases the plasma vitamin A failed to show the usual rapid increase after massive dosing. It appears that in infective hepatitis the mechanisms responsible for the absorption of vitamin A from the intestine, for its deposition in the liver, and for its release into the blood stream are not always involved to the same degree. The interpretation of the results of "absorption tests" as a measure of the degree of injury to the liver therefore seems uncertain.

Edinburgh Medical Journal, London

54:65-128 (Feb.) 1947

Etiology and Diagnosis of Amebiasis. R. M. Murray-Lyon.—p. 65.
Amebiasis. J. D. S. Cameron.—p. 76.
Outlet Contraction of the Pelvis.—W. I. C. Morris.—p. 90.
Care of the Small Premature Infant. H. L. Wallace.—p. 111.
*Common Physical Signs in Old Age. T. H Howell.—p. 123.

Common Physical Signs in Old Age.—Howell discusses some of the physical signs encountered during a survey of 340 healthy pensioners. He stresses that many physical signs are quite compatible with an active and healthy old age. A high blood pressure, cardiac murmurs, thickened arteries, absent tendon reflexes, some pigmentation of the skin and a lowered temperature are all to be found in normal old people.

Glasgow Medical Journal

28:103-126 (April) 1947

*Dermatitis as a Monosymptomatic Manifestation of Nicotinic Acid Deficiency. A. J. S. McFadzean.—p. 103.
Tomography of Bronchiectasis by Means of Preselected Planes of Section. E. Tiscenco.—p. 116.

Dermatitis and Nicotinic Acid Deficiency.—McFadzean directs attention to skin lesions attributable to nicotinic acid deficiency unassociated with other symptoms of such deficiency and occurring in otherwise normal persons. The lesions were seen in early summer in the Middle East in 62 men of European stock. The 44 cases making up the first group occurred in a closed community of 2,764 men on the same diet and living under identical conditions. Group 2 consists of cases seen in the wards or outpatient department of a Middle East general hospital. All stages in development of the characteristic skin lesions of pellagra were seen, varying from the acute erythema with edema, vesiculation and crusting to the classic hyperpigmented, hyperkeratotic plaques with desquamation. Clinically the skin lesions were consistent with the dermatitis of pellagra, and consideration of the distribution of the lesions and the relevant circumstances led to the hypothesis that they had been provoked by solar irritation These lesions could be reproduced experimentally by exposure to sun or to ultraviolet radiation and could be prevented or cured by large doses of nicotinic acid. Observations suggested that the local manifestations of nicotinic acid deficiency depended on local irritation; in the absence of this, no lesion developed A method of provoking dermatitis by ultraviolet radiation has been described and should prove of diagnostic value in subclinical or suspected nicotinic acid deficiency.

J. of Neurol., Neurosurgery and Psychiatry, London

9:113-162 (Oct) 1946

Collagen Content of Rabbit Sciatic Nerve During Wallerian Degeneration M. Abercrombie and M L. Johnson —p 113.
Neurotic Predisposition and Disorganization Observed in Experiments with Cambridge Cockpit D R Davis p 119
Clinical and Pathologic Aspects of Progressive Atrophies of Globus Pallidus Alone or with Luy's Body. L van Bogaert —p. 125.
*A Case of Systemic Torula Infection with Tumor Formation in Meninges. L Krainer, J. M Small, A. B Hewlitt and F Deness —p 158

Systemic Torula Infection with Tumor in Meninges.—According to Krainer and his associates, typical cases of torula meningoencephalitis show diffuse, patchy meningitis with perivascular and embolic extension into the brain substance, while tumor formation in the meninges is rare and systemic lesions are usually inconspicuous The causative organism is a spheroidal, encapsulated, yeastlike fungus The case described in this paper concerned a Sikh, aged 32 It showed features distinct from the common clinical and pathologic picture of torula infection Systemic lesions were prominent before signs of central nervous system involvement The lesion in the cranium gave rise to the clinical picture of a space occupying lesion situated in the left frontal region At operation a globular tumor was found sharply demarcated from the brain substance and attached to the dura mater, the consistency and color being that of a meningioma. The microscopic examination showed the typical picture of torula granuloma Specific cerebrospinal fluid changes were absent before and after operation The causative organism was isolated from the systemic lesion of the right thigh before there were signs of a cerebral tumor. The organism was classified as type III of Torula histolytica Freeman

Journal of Physiology, Cambridge

106:1-112 (March 15) 1947. Partial Index

Potentiating Action of Acetylcholine on That of Adrenalin R J. S McDowall —p 1.
Effects of Magnesium Ions and of Creatine Phosphate on Synthesis of Acetylcholine W Feldberg and Catherine Hebb —p 8
Effects of Analeptics on Fatigued Subject D P. Cuthbertson and J. A C Knox —p 42
Binocular Summation Within Nervous Pathways of Pupillary Light Reflex. I. C. Thomson —p. 59.
Subthreshold Potentials in Medulated Nerve B Katz —p 66
Nervous Pathways of Intestinal Reflexes Associated with Nausea and Vomiting R A Gregory —p 95
Action of Soya Bean Trypsin Inhibitor as Antithromboplastin in Blood Coagulation R G. MacFarlane —p 104.

Journal of Tropical Medicine and Hygiene, London

50:61-78 (April) 1947

Kwashiorkor (Malignant Malnutrition) Arising in Assam K P Hare —p 63.
Tuberculous Pericarditis in the African M Gelfand —p 68
Tropical Pyomyositis R T. Burkitt —p 71
*Chang Shan in Treatment of Malaria Cheng Fang Tsu —p 75

Chang Shan in Malaria.—According to Cheng Fang Tsu, the indigenous Chinese drug chang shan has been used in China for the treatment of malaria for more than two thousand years. The vomiting produced by the extract prepared according to the old methods has been largely eliminated by a newer method of extraction The extract was given to 322 patients with benign tertian malaria; 67 per cent of these were cured, and of 253 patients with malignant tertian malaria 63 per cent were cured. A further series of 67 patients with tertian and 14 with malignant malaria were hospitalized and treated with chang shan. In most cases the chang shan extract was given by mouth, but in a few cases intramuscular injection was tried. The local reaction was not unduly severe. Gastric symptoms could be avoided by preliminary administration of bismuth subnitrate or hyoscyamus and sodium bicarbonate. So far no other secondary effects have been observed even when the individual dosage was raised to 8 cc. and the daily dosage to 40 cc.

Lancet, London

1:507-542 (April 19) 1947

Recovery from Starvation. R O. Murray —p 507.
*Folic Acid in Treatment of Sprue Syndrome L S. P. Davidson, R. H. Girdwood and Elizabeth M. Innes —p. 511
Care of Urinary Tract in Paraplegic Patients: Review of 82 Cases. H. Donovan —p 515
Bilateral Congenital Dislocation of Radial Head R. K. Magee —p 519
*Toxic Effects of Thiourea, Thiouracil, Methyl Thiouracil and Aminothiazole in Thyrotoxicosis. Margaret E. Morgans —p 519.

Folic Acid in Sprue.—Davidson and his associates report the hematologic changes in 10 cases of the sprue syndrome after treatment with synthetic folic acid The hematologic response was considered unsatisfactory in 9 patients in that the treatment either produced no significant rise in the red cell count or failed to restore the blood level and hematologic picture to normal · Diarrhea was controlled and clinical improvement resulted in the 7 adults with tropical sprue or idiopathic steatorrhea. In contrast, no significant benefit was observed in the 3 patients with celiac disease. Folic acid did not improve fat absorption, as estimated by fat balance tests, in 5 out of 6 cases of the sprue syndrome. The unsatisfactory hematologic responses were in striking contrast to the results obtained by Spies et al and García Lopez et al. in cases of tropical sprue. These workers laid down criteria for the selection of patients, one of which was that the marrow should be megaloblastic. Only 1 of the patients in the authors' group had megaloblastic marrow at the start of folic acid therapy, and it was this 1 patient who obtained the most dramatic initial hematologic response.

Toxic Effects of Thiourea, Thiouracil, Methyl Thiouracil and Aminothiazole in Thyrotoxicosis.—Morgans found that thiourea and aminothiazole have many toxic effects and both depress the granular cells of the blood Their use in clinical practice is no longer justifiable. Thiouracil and methyl thiouracil also depress the granular cells of the blood, but during their use the incidence of other complications is much lower than with the other two drugs. Thiouracil and methyl thiouracil can be used with a reasonable degree of safety, provided the patients are carefully watched

1:543-582 (April 26) 1947

Surgical Handicraft. H Ogilvie —p 543
*Survival of Variola Virus in Dried Exudate and Crusts from Smallpox Patients. A W. Downie and K R. Dumbell —p 550
Sonne Dysentery and Nonspecific Gastroenteritis in a Hospital L Martin and M. M. Wilson.—p 553
Diagnosis of Epilepsy in Service Cases. T. B S Dick —p 555
Therapeutic Uses of Khellin· Method of Standardization G V Anrep, M R Kenawa, G S Barsoum and G Misrahy —p 557

Survival of Variola Virus in Dried Exudate and Crusts from Smallpox Patients.—Downie and Dumbell used chorioallantoic membranes of developing hen's eggs to detect the presence of virus in vesicle fluid and crusts from smallpox patients By this means virus was found to survive in diluted vesicle fluid dried on glass slides for thirty-five days when exposed to daylight and for eighty-four days when kept in the dark at room temperature Virus was recovered from different samples of crusts kept at room temperature for several months and from one specimen kept thus for over a year The authors have isolated virus from the sweepings from the ward floor near a bed in which a child was convalescing from smallpox. They also cite outbreaks among laundry workers who handled bedclothes of smallpox patients

Medical Journal of Australia, Sydney

1:289-321 (March 8) 1947

*Penicillin in Treatment of Discharge from Middle Ear. R. E. Dunn. —p. 289.
Treatment of Placenta Previa. J. Chesterman.—p. 293.
Peripheral Venous Thrombosis: Preventive Measures and Treatment. A. B. Jones.—p. 297.
Postoperative Thrombosis and Blood Coagulation Times. H. Cummine. —p. 302.

Penicillin for Discharge from Middle Ear.—The records of the cases of discharging ears reviewed by Dunn were collected at the 115th (Heidelberg) Military Hospital. Penicillin was applied locally by intramuscular injection and by intramuscular and intrathecal injection. The response of a discharging middle ear to the local application of penicillin occurred within three to four days, while with intramuscular injections of penicillin about five or six days were required for the production of a dry ear. Forty of 63 patients with a middle ear discharge were found to be harboring a penicillin sensitive organism. Thirty of the 40 patients with a discharge from the middle ear which yielded penicillin sensitive organisms on culture responded to penicillin treatment. The intramuscular injection of penicillin was found beneficial in (1) acute otitis media: (*a*) patients not responding satisfactorily to sulfamerazine by mouth, harboring a staphylococcus in their aural discharge and obviously suffering from mastoiditis; (*b*) patients unable to be treated with sulfamerazine; (2) aural discharge following a fracture of the skull. In intracranial complications of mastoiditis penicillin therapy was disappointing.

1:321-352 (March 15) 1947

Anticoagulant Liberated from Perfused Mammalian Liver. E. R. Trethewie, Joan B. Cleland and T. J. Pengelley.—p. 321.
*Treatment of Rheumatoid and Infective Arthritis by Sulfonamides, with Special Reference to "Proseptasine," Sulfadiazine and Sulfaguanidine. L. J. A. Parr and Eva A. Shipton.—p. 323.
Physiologic Basis of Modern Anesthesia. R. H. Orton.—p. 332.

Sulfonamides in Rheumatoid and Infective Arthritis.—Parr and Shipton experimented over a period of approximately nine years with small daily doses of the sulfonamides given for a long period with a view to ascertaining their effects in the so-called rheumatic diseases. A small dosage of three tablets per day (1.5 Gm.) was employed. In acute cases associated with fever, larger doses up to three or four Gm. per day may be employed. Of the complications the rash is highly irritable and possibly allergic in nature, but the changes in the hemopoietic system are the most important. The importance and significance of anemia, leukopenia and eosinophilia are stressed. Administration of liver and yeast are indicated to prevent their occurrence. The probable value of pyridoxine and folic acid is mentioned. The beneficial effect of the drugs is shown by the improvement in color, the disappearance of cyanosis, the relief or disappearance of pain, swelling and stiffness of the joints, an increase in the number of red blood cells and the improvement in the blood sedimentation rate. For patients who only partly respond to the sulfonamides, the authors recommend supplementary therapy such as liver extract, yeast, calcium gluconate, iron and perhaps gold therapy. The mode of action of the sulfonamides is discussed with regard to their interference with oxygen consumption, and the view is expressed that with the smaller doses there occurs a vital suppression of bacterial oxygen consumption and therefore of bacterial growth, enabling the body cells with their smaller metabolic demand to regain the mastery over infection. The importance of repeated blood counts is stressed.

1:353-384 (March 22) 1947. Partial Index

*Beneficial Effects of Yeast in Diabetes Mellitus. L. J. A. Parr and Eva A. Shipton.—p. 365.
Anesthesia for Upper Abdominal Surgery. I. A. Schalit.—p. 367.
Precautionary Measure Advisable in Certain Endurance Tests. W. J. Lawrence—p. 370.

Beneficial Effects of Yeast in Diabetes Mellitus.—Parr and Shipton give the histories of 4 patients who were treated with yeast. There was evidence of considerable recovery in some of the beta cells of the islands of Langerhans. One patient responded to treatment without insulin. Of the 3 patients receiving insulin, 1 experienced a 40 per cent recovery and another has been off insulin for about eighteen months. The third is showing a pronounced decrease in the blood sugar level and diminution of insulin requirements. Either brewers' or bakers' yeast can be used. The authors mention the ability of yeasts to control ketosis and make the suggestion that the increase of diabetes in civilized communities may be due to the lack of the vitamin B complex in food. The need of a better type of bread is stressed.

New Zealand Medical Journal, Wellington

46:75-166 (April) 1947

Some Observations on High Blood Pressure. F. H. Smirk.—p. 86.
Surgery of Attic Suppuration. A. Wardale.—p. 102.
*Visceral Zoster: Report of a Case. W. M. Porteous.—p. 106.
Hydatid Cyst of Lung of Unusual Size: Report of Fatal Case. I. A. M. Prior.—p. 109.
Respiratory Motor Phenomena of Conversion Hysteria. I. M. Allen, —p. 113.
Investigation of Epidemic Eye Disease in Fiji. W. J. Hope-Robertson and L. S. Talbot.—p. 122.
Some Impressions of Surgery in Scandinavia. D. G. Simpson.—p. 129.
Fainting and Shock. J. W. Tomb.—p. 131.

Visceral Zoster.—According to Porteous painful visceral disease, not directly involving dorsal nerve roots, is sometimes associated with zoster in corresponding or neighboring dermatomes. The skin lesions may precede, accompany or follow the onset of visceral symptoms. A man aged 66, who for many years had been subject to nausea and heartburn after dietary indiscretions, for some months had noticed occasional soreness deeply situated beneath the left rib margin lateral to the rectus muscle. Two weeks before admission he experienced severe, shooting, knifelike pains in the right shoulder and back of the right arm, and four days later a zoster eruption appeared in the distribution of the tenth left dorsal nerve. The significance of the occasional pains beneath the left ribs, which were noted for some months prior to admission, is uncertain. Possibly they indicate that gastric ulceration was already present. Vomiting and gastrointestinal hemorrhage began five days after the appearance of zoster, and thirteen days later there was another severe hemorrhage, with probable perforation of the stomach and localized peritonitis. The pain felt in the right arm at the onset indicates that cervical as well as thoracic segments were affected by the herpetic process, and this is evidence in favor of the view that this was a case of "primary" or "idiopathic" herpes zoster with resulting visceral lesions. Complete recovery occurred.

Quarterly Journal of Medicine, Oxford

16:1-46 (Jan.) 1947

*Hunger Edema. F. A. Denz.—p. 1.
*Edematous Syndrome of Nephritis, with Special Reference to Prognosis. J. B. Rennie.—p. 21.
Osteomalacia with Looser's Nodes (Milkman's Syndrome) Due to Raised Resistance to Vitamin D Acquired About the Age of 15 Years. R. A. McCance.—p. 33.

Hunger Edema.—Denz reports investigations on the plasma protein levels in a small number of cases of edema occurring among German civilian internees. Total plasma proteins are decreased in patients with edema. Mean values of 5.24 Gm. per hundred cubic centimeters of plasma in slight cases, 5.07 in moderate cases and 4.90 in severe cases were obtained as compared with 7.04 Gm. for a normal control group. Plasma-albumin values in 14 edema cases ranged from 2.58 to 3.81 Gm. The lowered plasma proteins are believed to result in the accumulation of edema that commences with the first lowering of the protein level. The view that there is a critical level of plasma protein for the production of edema is not accepted. Four patients with apparently cured edema were exercised with reappearance of the edema. Two patients with edema were exercised while on full diet with persistence of the edema until the patients were allowed complete rest. Daily plasma protein determinations on edema cases showed a diurnal variation which was probably due to variation in the degree of hydration of the blood. The inaccuracy of the clinical assessment of edema is illustrated by a patient showing minimal edema, who lost

8 5 liters of edema fluid whereas another showing severe edema lost only 2 liters of edema fluid Much excess fluid may be hidden in the deeper connective tissues of the mediastinum and abdomen

Edematous Syndrome of Nephritis—Remme discusses the fate of patients with that form of Bright's disease characterized by persistent edema and heavy proteinuria The authors review the course of the edematous syndrome in 29 patients and determine the functional state of the kidneys in the survivors The observations extended over a period of sixteen years None of the patients had a history of acute nephritis In 1946, 13 patients were alive Three appeared to be well in every respect seven, thirteen and fifteen years from the appearance of edema and 2 six and fourteen years afterward showed a faint trace of albumin in the urine as the sole abnormality Three patients, although free of edema showed greater albuminuria and microscopic hematuria Of the remaining 5 3 were still edematous and 2 although free of edema, were showing increasing hypertension Sixteen patients had died 12 of uremia, 3 of intercurrent infection and 1 after an intravenous injection of a mercurial diuretic All three recoveries were noted in patients in whom hypertension azotemia and hematuria were not observed Hypertension was an early indication of a progressive lesion Of 14 patients with hypertension when first seen 8 died of uremia and only 1 of the remainder improved

Annales d'Oto-Laryngologie, Paris

13:393-520 (Sept-Oct) 1946

Pulmonary Abscess and Penicillin A [illegible] and P Hyjeau—p 393
Bronchoscopotherapy in Bronchopulmonary [illegible] and Particularly in Bronchial Stenosis A Soulas—p [illegible]
*Acute Nondiphtherial Stenosing Laryngitis in Children and Its Endoscopic Treatment J Hamon and H Le Mercier—p 413
Complicated Histories of Foreign Bodies in Bronchi A Soulas—p 436

Acute Stenosing Laryngitis—Hamon and Le Mercier report 25 cases of acute nondiphtherial stenosing laryngitis in children Diagnosis was made with the aid of direct laryngoscopy and established by laboratory examination Staphylococci were demonstrated in the great majority of cases streptococci were observed occasionally and pneumococci and enterococci in only 1 case Local treatment consisted in aspiration and direct intubation under direct laryngoscopy This simple method provides control by the eye prevents trauma and secures appropriate caliber of the tube Removal of the tube was made under laryngoscopic control General treatment for combating or preventing bronchopneumonia and edema consisted in administration of 1 to 2 cc of propidon (Delbet's vaccine), oral administration of 2 to 4 Gm of sulfadiazine or parenteral administration of 2 to 4 Gm of solufontamide (a sulfonamide preparation) for twenty-four hours The patient may be placed in an oxygen tent Antispasmodics proved effective during the hours following removal of the tube All danger of asphyxia disappeared within forty-eight to seventy two hours and complete recovery occurred in 24 cases, while death occurred in 1 case with false membrane complicated by bronchopneumonia and measles The value of penicillin in acute stenosing laryngitis is controversial, but its effect was decisive in 2 cases complicated by bronchopneumonia

Lyon Chirurgical, Paris

42:5-128 (Jan-Feb) 1947 Partial Index

Tumors of Bones and Traumas J Tavernier and C Godinot—p 5
*Injury of Ampulla of Vater in Course of Gastroduodenectomy for Ulcer Curative Treatment P Santy and P L Duroux—p 13
*Procaine Infiltration of Carotid Sinus Experimental and Clinical Basis Indications and Results J Creyssel, P Suire and J Sournia—p 23
Retropubic Prostatectomy Operation of Terence Millin J Cibert, H Cavailher and J Perrin—p 40
Sulfate of Beta Phenylisopropylamine in Biliary Hypertension P Mallet Guy and R Jeanjean—p 47
Grave Postoperative Accidents in Alcoholic Addicts P Goinard J Ferrand and P Tardieu—p 56
Ligation of Abdominal Aorta (in Connection with Traumatic Aneurysmal Hematoma of Left Internal Iliac Fossa) P Rochet, P Santy, G Allegre and L Jacquemet—p 63

Injury of Ampulla of Vater in Gastroduodenectomy—The possibility of injuring the choledochus and Wirsung's duct in the course of gastroduodenectomy is one of the arguments often and justly invoked in opposing exeresis of chronic ulcers that have deeply penetrated into the pancreas Santy and Duroux show that this is a comparatively rare occurrence and that this risk can be accepted, because means are available to remedy it

Procaine Infiltration of Carotid Sinus—Creyssel and his associates point out that since 1940, when they reported their first experiences with procaine infiltration of the carotid sinus for traumatic shock, this therapeutic method has been repeatedly discussed in the literature Infiltration of the carotid sinus has been employed in five groups of cases: traumatic shock, surgical shock, obstetric shock, collapse due to acute peritoneal syndromes and adrenal insufficiency Experimental studies have not only demonstrated the prophylactic value of carotid infiltration against operative shock but have also thrown light on the physiologic action of the sinus The authors list indications for its employment and suggestions with regard to conditions in which it might be employed, such as grave craniocerebral trauma, epileptic attacks, cerebral apoplexy, laryngeal spasms and syndromes of parathyroid insufficiency

Presse Médicale, Paris

55:173-184 (March 15) 1947

Segmental Bronchitis E Rist P Ameuille and J M Lemoine—p 173
*Repeated Syncopes Connected with Sinus Hyperreactivity Cured by Carotid Sinus Denervation L Leger and M Coste—p 174
Physiologic Effects of Oxidized Derivatives of Epinephrine Z M Bacq—p 175

Carotid Sinus Denervation for Syncopes Caused by Sinusal Hyperreactivity.—Leger and Coste present the history of a man aged 62 who had repeated syncopal attacks, which usually came on in connection with some effort, such as rising from the bed The complete ineffectiveness of various treatments together with the uncertainty of the diagnosis made one of the authors think of the possibility of a sinusal hyperreactivity, and tests which employed compression of the carotid sinus confirmed this hypothesis Injection of procaine into the area of the carotid sinus in the course of a syncopal attack arrested the attack, and when the sinus was compressed under procaine no syncopal attack resulted A carotid sinus denervation was performed, and since then there has been no recurrence of the attacks In about two thirds cure resulted and in half of the remaining patients there was some improvement

55:185-200 (March 19) 1947

*Experimental Research on Production of Ulcer and Gastric Perforation by Histamine Pasteur Vallery Radot, B N Halpern and J Martin—p 185
Present Role of Penicillin in Treatment of Syphilis L M Pautrier—p 187
Cutaneous Reaction to Local Sulfonamide Therapy (Particularities of Cutaneous Tests) A Tzanck E Sidi and J Roujeau—p 188
Polypoid Formation of Gastric Mucosa with Umbilicated Summit Simulating Polyadenoma G Albot, L Leger and A Tricard—p 190
Intraepiloid Inflammatory Pseudotumor Caused by Ascaris J Thiboumery—p 192
Technic of Total Intraisthmian Hysterectomy C Elbaz—p 194
Electroencephalogram in Cerebral Tumors O Sager and A Kreindler.—p 195
Congenital Bronchiectasis P Lageze and P Buffard—p 197

Histamine Produced Ulcer and Gastric Perforation—Pasteur Vallery-Radot and his co-workers demonstrated that guinea pigs will tolerate 1,500 fatal doses of histamine, provided dimethyl amino ethyl-thiodiphenylamine (3015 RP) or dimethylamine-2-propyl-1-thiodiphenylamine (3277 RP) is given prophylactically These synthetic antihistamines do not inhibit the stimulating secretory effect of histamine on the gastric mucosa, although they neutralize the effect of histamine on all the other physiologic functions The authors produced various lesions in the gastric mucosa by intravenous injections of 100 to 1,000 fatal doses of histamine bichlorine hydrate Microscopic examination revealed simple erosions, acute and indolent ulcers and perforation of the gastric mucosa, depending on the dose of histamine injected, on the interval between the injection and the time the animal was killed, varying from one hour to four days and on spontaneous death resulting from repeated histamine injections The experimental lesions were identical with those observed in man Vascular involvement was limited to simple vasodilatation

Rivista di Clinica Pediatrica, Florence

44:721-792 (Dec.) 1946. **Partial Index**

*Jaksch-Hayem-Luzet's Anemia. G. Careddu.—p. 721.

Jaksch-Hayem-Luzet's Anemia.—Careddu reports the occurrence in 2 infants aged 20 and 16 months, respectively, of Jaksch-Hayem-Luzet's splenic anemia which became manifest in early infancy and appeared to be caused by chronic suppuration of the scalp. Syphilis, tuberculosis, leishmaniasis and malaria were ruled out. Brothers and parents were normal. The differential diagnosis between this type of splenic anemia and Cooley's and Di Guglielmo's form is facilitated by the difference in fragility and the size of the erythrocytes. Jaksch-Hayem-Luzet's anemia is rare. The 2 reported cases were seen in a group of 50 cases of anemia in children.

Arch. Urug. de Med. Cir. y Especialid., Montevideo

29:221-332 (Sept.) 1946. **Partial Index**

*Diphtheria in Uruguay. C. Fabini and A. Panizza Blanco.—p. 221.
Technic for Determination of Blood Group of Hemolyzed Blood. H. Mazzella.—p. 268.

Diphtheria in Uruguay.—A review of the epidemiology of diphtheria in Uruguay before and after the establishment of obligatory vaccination of school children shows that morbidity and mortality indexes from diphtheria have greatly diminished in children in the age group 6 to 14 years, have moderately diminished in infants and children in the preschool age as a result of vaccination (although it is not as yet obligatory for children in this age group) and have not changed in infants in the first six months of life and in adults (age groups of nonvaccinated persons). At present acute diphtheria occurs in children who have had no vaccination and in those who had either incomplete immunization or had the vaccination three years or more before the actual epidemic. Obligatory vaccination of infants and children from the ages of 6 months up to 12 years and periodic revaccination are of importance in the prevention of diphtheria.

Medicina,* Mexico, D. F.

27:149-172 (April 10) 1947. **Partial Index**

*Foot and Mouth Disease in Man. M. M. Arocha.—p. 163.

Foot and Mouth Disease in Man.—In the 5 cases reported, the clinical diagnosis was confirmed by laboratory tests (inoculations in guinea pigs). Four of the cases (2 acute and 2 subacute) were in 2 brothers and their parents; the fifth was in a friend of the children. Contagion seemed to be due to the proximity of the children to infected cows in their neighborhood.

American Review of Soviet Medicine, New York

4:291-384 (April) 1947

Medical Research in the U. S. S. R. V. Parin.—p. 292.
Research Program of the U. S. Public Health Service. R. E. Dyer.—p. 300.
Health in Byelorussia—A Devastated Area of the Soviet Union. L. A. Falk.—p. 306.
Microbiology in the Soviet Union. S. A. Waksman.—p. 314.
Experimental Cancer Research in the U. S. S. R. R. E. Kavetski.—p. 322.
Radiotherapy of Malignant Tumors in the U. S. S. R. M. Pobedinski.—p. 328.
Cancer as a Systemic Disease. C. P. Rhoads.—p. 333.
Cancer Prevention and Control in the U. S. S. R. A. I. Serebrov.—p. 343.
Organization of a Cancer Research Institute. S. P. Reimann.—p. 348.

Maandschrift voor Kindergeneeskunde, Leyden

15:1-35 (Jan.) 1947

*Toxoplasmosis: A Parasitologically Demonstrated Diagnosis (?); Significance of Clinical Manifestation in Infantile Toxoplasmosis. C. D. Binkhorst.—p. 1.
Desquamative Erythrodermia (Leiner-Moussous' Disease). C. van Waalwijk van Doorn.—p. 12.
Active Immunization Against Typhoid, Spotted Typhus, Bacillary Dysentery, Tetanus and Influenza. G. M. H. Veeneklaas.—p. 20.

Toxoplasmosis.—Binkhorst reports the probable occurrence of toxoplasmosis in a girl aged 6 years. Many signs characteristic of infantile toxoplasmosis were present, such as psychomotor disturbances, roentgenographically demonstrable intracranial calcifications, microphthalmia and chorioretinitis. The clinical diagnosis was made more probable by the demonstration of toxoplasma-like bodies in the cerebrospinal fluid. This is the first case reported in European literature in which diagnosis was made *intra vitam* and is one of the few nonfatal cases of infantile toxoplasmosis. Moreover, 1 case of hereditary chorioretinitis, 1 case of chorioretinitis in chronic encephalitis and 1 case of encephalitis with chorioretinitis and intracerebral calcifications are described.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:589-664 (March 15) 1947

*Chronic Form of Brucellosis. J. C. Gerrits.—p. 600.
Therapeutic Results in Treatment of Urinary Infections in Department for Internal Diseases. L. Loopuyt.—p. 611.
Neurosurgical Treatment of Cerebral Abscess. C. H. Lenshoek.—p. 616.

Chronic Brucellosis.—Gerrits points out that chronic brucellosis closely resembles the onset of pulmonary tuberculosis. He presents histories of 2 patients with recurring hemoptyses. Pulmonary tuberculosis had been suspected, but the condition was diagnosed as chronic brucellosis on the basis of the clinical picture. In the first patient this diagnosis was verified by a positive skin test and in the second by a positive agglutination reaction of 1 : 100 and a positive skin test. The author investigated the possibility of brucellosis in patients in whom tuberculosis had been suspected because of fatigue, night sweats, subfebrile temperature and hemoptysis but in whom tuberculosis could be excluded. In 3 of 66 patients sarcoma, carcinoma and syphilis were detected, but in the others the diagnosis remained obscure. A skin test for brucellosis was positive in 33 of the remaining 63 patients. In some of these patients brucellosis can be diagnosed on the basis of the clinical symptoms. Of 40 patients in whom brucellosis was not suspected, only 3 gave positive skin tests.

91:729-788 (March 29) 1947

*Pulse and Respiratory Frequency in Malaria. E. van der Kuyp.—p. 735.
Penicillin Intoxication? J. J. H. M. Klessens.—p. 740.
Experimental Psychologic Investigations on Astereognosis: Physiology and Pathology of Stereognosis. J. J. G. Prick and P. J. A. Calon.—p. 745.

Pulse and Respiratory Frequency in Malaria.—Van der Kuyp reviews observations on the temperature, pulse rate and respiration of 130 patients with quartan malaria and of patients with tertian or subtertian malaria observed at a hospital in Paramaribo. Pulse and respiration curves showed the quartan, tertian or subtertian type more constantly and more clearly than did the temperature curves. The three curves often supplemented one another in such a way as to make the type of fever clear. The pulse curve sometimes showed the existence of a duplex or triplex quartan infection. During treatment the temperature was the first to become normal. In patients in whom the pulse and respiration did not become normal, a relapse followed. The characteristic course suggests that schizogony on a small scale is responsible for the changes in pulse rate and respiration, because the quantity of liberated toxins is too small to influence the temperature but large enough to influence the pulse and respiratory rate, these being more sensitive to these toxins.

Acta Pædiatrica, Stockholm

33:1-114 (Oct. 31) 1945

Prognosis for Bronchial Asthma Arisen in Infancy, After Nonspecific Treatment Hitherto Applied. E. W. Flensborg.—p. 4.
*Genesis of Erythroblastosis Fetalis. S. Ranström.—p. 25.
*Acute Benign Mononuclear Meningitis. E. Jacobsson.—p. 37.
Allergic Purpura with Hypoprothrombinemia. A. Njå.—p. 54.
Familial Congenital Hypertrichosis Totalis (Trichostasis). T. A. E. Janssen and Cornelia de Lange.—p. 69.
Clinical Appearance and Diagnosis of Colon Polypus. J. Lewis-Jonsson.—p. 79.
*Gastroduodenal Ulcer in Childhood. E. Wamberg.—p. 86.
Genu Varum in Children: Typical Roentgen Picture. A. Renander.—p. 98.
Knobby Formations in Cranial Bones in Severe Anemias During Childhood. V. Liakka.—p. 104.

Genesis of Erythroblastosis Fetalis.—Ranström says that since the formulation of the Rh isoimmunization theory of erythroblastosis fetalis, it has usually been referred to as hemolytic disease of the newborn. This theory of Rh isoimmunization raises a number of questions for which there is no satisfactory answer. It remains to be explained (1) why signs of Rh isoimmunization are absent in a number of cases of erythroblastosis, (2) why Rh isoimmunization can be shown to be present without erythroblastosis and (3) why the clinical course of the disease is not satisfactorily explained by the Rh isoimmunization theory. The author regards a placental lesion as an indispensable prerequisite of an isoimmunization and points out that before the Rh theory was advanced a number of observers had noted changes in certain of the endocrine organs. He reports 2 cases which in addition to adrenal hyperplasia and in 1 case of insular hyperplasia in the pancreas showed pituitary changes hitherto not described These pituitary changes consisted of an increase in basophil cells The theory of Rh isoimmunization does not explain the disturbances in the endocrine organs. The author advances the theory that the primary element in the disease is an endocrine dysfunction in the mother, which induces a placental change and changes in the endocrine organs of the fetus (perhaps mainly via its hypophysis), with resulting dysfunctions according to the character of these changes. The data in the literature point to an abnormally high production of estrone or gonadotropic hormone. In some cases, especially in hydrops fetalis, the endocrine disturbances are thought to determine the issue. When the appropriate serologic conditions are present, the placental lesion paves the way for an Rh isoimmunization, which in turn is considered to influence the appearance of icterus gravis and anemia gravis neonatorum. The author outlines an endocrine therapy for erythroblastosis fetalis on the basis of this theory

Acute Benign Mononuclear Meningitis.—Jacobsson reviews observations on 25 cases of acute benign mononuclear meningitis treated at the Gothenburg Children's Hospital since 1922 and presents the case histories for those reported during the past fifteen years. The relations of the disease to poliomyelitis and encephalitis are discussed, it being claimed that no absolutely certain connection between them has heretofore been demonstrated. As a rule the course of the disease is rapid and benign. There is no specific therapy, nor is it necessary.

Gastroduodenal Ulcer in Childhood.—Wamberg reports that a girl aged 9 years had had periodic vomiting for five years and that a girl aged 11 years had had attacks of vomiting for two years as well as periodic, partly tardy pain in the epigastric region and melena twice. Ewald's test meal and x-ray examination revealed a typical duodenal ulcer in both patients. Ulcerations of the stomach and duodenum are most frequently encountered in the first year of life and around puberty. In infancy the ulcers nearly always have appeared in conjunction with infections, intoxications, traumas, circulatory disorders, burns or cachexia. The ulcers occurring in children above 5 years of age in the vast majority of cases are based on gastroduodenitis. The disease may manifest itself by (*a*) a gastroduodenitis syndrome, just as in adults, (*b*) the sudden occurrence of complications (hemorrhage or perforation) and most often by (*c*) vague and atypical symptoms The treatment should be conservative. Gastroduodenal ulcers in childhood presumably occur more frequently than is generally supposed. A more extensive use of x-rays in the examination of children with atypical dyspeptic symptoms would lead to a more frequent recognition of the condition.

33:*211-390* (Dec. 30) 1946. Partial Index

Chorionic Gonadotropin in Treatment of Disturbances of Development in Childhood and Adolescence. R. Luft—p. *211*
*Acute Leukemia in Children. J. Riis.—p. *230*
*Schönlein-Henoch's Purpura as Complication of Prophylactic Vaccination Against Diphtheria. H. Jelke.—p. *245*
Sex Linked Type of Gargoylism. A. Njå—p. *267.*
Pneumothorax, Mediastinal Emphysema and Cutaneous Emphysema Complicating Tracheotomy. D. Riis.—p. 321.
*Onset and Prognosis of Nephritis in Children. Å Frisk and G. Klackenberg.—p. *349.*
Acute Macrocytic Anemia in Newborn, with Special Reference to Relation to Erythroblastosis Fetalis. S. Heinild.—p. *373.*
Paroxysmal Tachycardia in Infants. E. Mannheimer.—p. *383.*

Acute Leukemia in Children.—According to Riis, textbooks still describe leukemias as following an acute course, with high fever, hemorrhagic diathesis, necroses in the larynx and oral cavity and having a rapid course. A number of monographs in recent years have shown that this description applies only to the terminal stages of the disease. At the Pediatric Department of the University Hospital of Oslo 24 cases of acute leukemia have been diagnosed between 1937 and 1944. The patients were admitted under various diagnoses such as leukemia, anemia, acute rheumatism, scurvy with anemia, adenitis of the neck, mongolism, bronchopneumonia or disease of the blood. Fatigue, lack of appetite, pallor and fever were the most frequent initial symptoms. Enlargement of cervical lymph nodes and anemia are likewise frequent. In three fourths of the cases the disease began during the first five years of life. The acute leukemia in children as a rule is a myeloblastic leukemia (in at least 21 of 24 cases). In 18 cases sternal puncture was done successfully and revealed up to 99.4 per cent of myeloblasts. The pathologic type of cell was demonstrated in blood-smear preparations of all cases. The number of white cells varied from 1,300 to 185,000.

Schönlein-Henoch's Purpura After Prophylactic Vaccination Against Diphtheria.—Jelke observed a typical case of Schönlein-Henoch's purpura which developed two days after administration of toxoid. In addition to cutaneous hemorrhages there developed edemas of the extremities, articular pains, colic, occult intestinal hemorrhage and hematuria. The cutaneous hemorrhages appeared in successive crops over a period of five months. Patch tests with toxoid were negative, but intracutaneous injection of 0.001 cc. of a toxoid dilution resulted in intestinal hemorrhage, which proved that diphtheria toxoid was the eliciting allergen.

Onset and Prognosis of Nephritis in Children.—Frisk and Klackenberg thought that follow-up examinations a sufficient number of years after the onset of nephritis would throw light on the prognosis. Their studies were made on 239 patients, of whom 96 per cent were still alive from ten to twenty years after the first hospital treatment. In addition to the ordinary tests, quantitative sediment counts by Addis's method were made. Ninety per cent of the patients with acute nephritis, most of whom had had a hemorrhagic onset, had recovered. Slightly more than 5 per cent had permanent renal damage, and somewhat less than 5 per cent were borderline cases, where further investigation would have been necessary for definite classification. An unnoticed insidious onset was combined with bad prognosis. This form of the disease, termed primary chronic, led to death within five years. This type of onset is not common, accounting for only 11 cases. The secondary chronic, on the other hand, influenced the general state of health surprisingly little over a long period. Acute convulsive uremia and the extent of the initial albumin did not influence the prognosis, nor did tonsillectomy.

Nordisk Medicin, Gothenburg

33:300-458 (Feb. 14) 1947

Folic Acid. J. Waldenström—p. 399.
Health of Copenhagen School Children During War Years. K. Bojlen.—p. 403.

Hospitalstidende

*Significance of Positive Takata Reaction: Examination of 5,825 Serums Sent In for Wassermann Test. T. Fløystrup.—p. 407.
Sulfonamide Anuria. B. Viking.—p. 410.

Norsk Magasin for Lægevidenskapen

Metastatic Myositis with Glandular Abscess (Streptococcic Metastasis): Two Atypical Cases. O. Solvaag.—p. 429.
*Takata Reaction in Extrahepatic Disorders. H. F. Lange.—p. 432.

Hygiea

Value of Cholangiography. O. Schuberth—p. 441.
Surgical Treatment of Megacolon. I. R. Sandberg—p. 445.

Significance of Positive Takata Reaction.—Fløystrup reports that the Takata reaction was positive in 100 of 5,825 serums. In 83 cases injury of the liver parenchyma was established, hepatitis in 71, cirrhosis of the liver in 8. In 7 of the remaining 17 cases there was congestion of the liver. Of the 35 cases with maximal precipitation 29 were due to chronic hepatitis and 3 to cirrhosis of the liver. Although many serums must have come from patients with cholelithiasis, no positive reactions were recorded in these.

Takata Reaction in Extrahepatic Disorders.—Lange says that of 123 cases with positive Takata reactions about three fifths appeared in extrahepatic disorders, especially in chronic, nonspecific pulmonary diseases. A positive Takata reaction in pulmonary disorders is an unfavorable prognostic sign.

Book Notices

Biochemistry of Cancer. By Jesse P. Greenstein, Head Biochemist, Chairman, Section on Biochemistry, National Cancer Institute, National Institute of Health, United States Public Health Service, Bethesda, Maryland. Cloth. Price, $7.80. Pp. 389, with 39 illustrations. Academic Press, Inc., 125 E. 23d St., New York 10, 1947.

This book, which comprises in good part the extensive investigations of the author and others at the National Cancer Institute, discusses biochemical studies in the field of cancer research which have yielded results of interest and significance. As stated by the author in the preface, a desire to show the reader the tremendous gaps that exist in our knowledge and to illustrate the possibilities of reciprocal enrichment in the fields of normal and abnormal cell physiology are brought home.

The material is presented in four general categories, on general phenomena and taxonomy of cancer, the induction of tumors including extrinsic and intrinsic factors, attempts at control of tumor induction and growth by nutritional, endocrinologic and chemotherapeutic means, and the properties of tumors, which is divided into a long chapter on the chemistry of tumors and another on the chemistry of the tumor bearing host.

The second chapter, on the general phenomena and taxonomy of cancer, deals briefly with some characteristics of tumors and their transmissibility, and on the development and use of inbred strains of mice for experimental cancer research. The discovery of the carcinogenic polycyclic hydrocarbons and their many synthesized derivatives is discussed in relation to their comparative carcinogenic action in different sites of the body of many strains of mice, in chapter 3. Also the interesting problem of their metabolism is discussed and the dosage of and response to them in various organs of mice of inbred strains under many experimental conditions is given. A brief summary of the large amount of information on the azo dyes and their derivatives which are widely used as carcinogenic agents is well summarized.

The role of intrinsic factors, or those possessing a biogenic origin, which deal largely with the influence of sex hormones on the development of cancer of the sex and accessory sex organs, is delineated in chapter 4. Also the effect of intrinsic influences on the development of lymphoid tumors and their effect on liver and kidney arginase is given. The chapter is completed with a summary of the role of milk factor in mammary carcinogenesis in mice and of the well known viral origin of fowls and of the Shope rabbit papilloma. The nutritional, endocrinologic and chemotherapeutic approaches for their effects on tumor induction and on tumor growth are concisely and well summarized in the next three sections.

Especially interesting to biochemists engaged in cancer research or enzymology, and probably the most important chapter in the book, is the one on the chemistry of tumors, a large portion of the investigations being those of the author. From a comparison of many enzymes studied in different normal tissues and their corresponding neoplastic growths, especially liver and hepatoma, the general conclusions—that tumors have qualitatively the same enzymes as normal tissues, that tumors tend to resemble one another chemically more than they do normal tissues, that a normal tissue in becoming cancerous may lose some of its specific functions altogether or contain them to a less degree than normal, and that tumors tend to converge to a common type of tissue—are of great value in a clarification of the conception of carcinogenesis.

The final chapter is on the effects produced in an animal as a consequence of the presence of a tumor; to those not aware of this phase of cancer research the results will be most enlightening. The effect of various tumors transplanted under the skin on lowering the hepatic and renal catalase, d-amino acid oxidase and arginase is quite dramatic. The possibility of using these changes or, better yet, of searching for possible subtle blood changes caused by transplanted and induced tumors for diagnostic purposes will be of obvious importance to all.

The size and format of the book are convenient and it appears to be relatively free of errors. It will serve as an excellent reference work for the student interested in cancer research, though in some phases it is not complete.

Concise Chemical and Technical Dictionary. Edited by H. Bennett, Technical Director, Glyco Products Co., Inc. Cloth. Price, $10. Pp. 1,055. Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y., 1947.

This type of book, if properly presented, is a useful addition to medical libraries. The student, teacher and physician today need information on a variety of chemical and technical subjects that have come about because of modern research. As soon as new ideas and substances are found to have practical value in medicine, the medical profession is introduced to new terms. The best sources of information frequently are not available and, if they are, contain detailed information that is not generally needed for the practitioner unless he has a special interest in the subject. The research worker, however, must refer to original publications. To meet such a need dictionaries can serve a useful purpose. However, they must be reasonably complete, accurate and informative to be useful for those interested in medicine. Bennett's Concise Chemical and Technical Dictionary cannot be regarded as satisfactory for this purpose, although it may have limited usefulness for those who want only casual information. Critics will not be satisfied with some of the definitions; the scope is not adequate and in a number of instances there is an unnecessary and perhaps confusing repetition; cross references are not always complete; there are various abbreviations that are not, so far as chemists are concerned, in common use, for example M. A. R., I. R., I. V. and I. W. It is disconcerting to look for a definition of bougie and be referred to "pencil" and not able to find a definition for pencil. It is rather irritating to find valuable space taken by definitions for words such as "tweed," which can hardly be classed as a word normally found in a chemical and technical dictionary unless the volume is of considerable size. Such a book as this could be much more useful if it were more complete and contained information that would reveal to the reader whether the name is protected or a common or generic name, what firm holds the name, more information on cosmetics, and whether the book is limited to the class of readers for which it is written; it is difficult to write a chemical and technical dictionary "for both professionals and laymen." About 50,000 definitions are claimed to be included in the volume, but they do not as stated "cover every field of scientific and technical development" except in a broad way. Pharmacists, physicians and those interested in cosmetics would like to see a better definition, for example, for night cream than "greasy type of cosmetic cream" and for penicillin "antibiotic substance found in the filtrate of a broth culture of Penicillium notatum." There might also be consistency in describing the uses of a compound; they could either be omitted or made more complete; for example, barbital is "used in medicine," while barbital soluble is "used as sedative, hypnotic." The author is to be commended for his attempt to undertake such a project; a book of this type is always needed. Unfortunately, however, as far as the medical profession is concerned, the results of the author's efforts cannot be as highly commended.

Pre-Frontal Leucotomy in 1,000 Cases. Great Britain, Board of Control (England and Wales). Paper. Price, 6d. Pp. 31. British Information Services, 30 Rockefeller Plaza, New York 20; His Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, 1947.

Prefrontal leukotómy has been adopted on a fairly large scale in England as a method of treatment for mental disorders that have proved refractory to other methods. This is a report by the Board of Control covering results in 1,000 cases from forty-three different hospitals. Thirty-five per cent of the patients have been discharged, and 32 per cent are improved though still remaining in the hospital. The operative mortality is 3 per cent, mostly due to hemorrhage. Only 1 per cent of the patients are considered worse as the result of operation. These figures, gratifying as they are, hardly tell the whole story in terms of relief from intolerable preoccupations and misery on the part of the patients and of reduction in dangerous and disturbed behavior on the part of hospital inmates. Only the most difficult patients have been subjected to leukotomy.

In the small monograph the figures are broken down as regards age, sex, diagnosis, duration and so on. Results are better in older patients with shorter duration and in the affective group rather than the schizophrenic. Leukotomy (lobotomy in this country) is particularly effective in relieving mental tension and depression, while hallucinations and delusions react less favorably. Relapses are of moderate frequency; epileptic fits and other complications are not very uncommon aftermaths; 242 patients are listed as "citizens" able to earn a living or keep house. While some brilliant results are reported in patients that have been institutionalized for a number of years, the striking feature of the report is the large number of successful results in those operated on within two years of the onset of the disease. Taking only the early cases, 50 per cent of the schizophrenic and 65 per cent of the manic-depressive group are discharged recovered if operated on within two years. The percentages fall to 10 or 15 in those operated on five years or more after onset. Even so, the improvement in hospital adjustment in these chronic cases runs around 40 per cent. "Remarkable improvement in behavior follows in a large percentage of cases who have had severe symptoms with poor prognosis and have failed to respond to other methods of treatment. Many are discharged from the hospital and others, while unfit to leave, become much more placid and easier to nurse. The question of whether or not these results are achieved at the cost of the loss of some finer mental qualities is not yet answered and further study is needed on this most important point."

This study, documented by several tables, answers many of the questions that are being asked concerning the surgical treatment of mental disorders. Other questions are propounded, but in view of the difficulties presented in gathering the material they can probably be answered better by individual investigators who follow their cases for long periods.

Chemotherapy Yesterday, To-Day, and To-Morrow. By Sir Alexander Fleming, M.B., F.R.C.S., F.R.C.P., Professor of Bacteriology, University of London, St. Mary's Hospital, London, W. 2. The Linacre Lecture Delivered at Cambridge on May 6, 1946. Paper. Price, 50 cents; 2s. Pp. 39, with 7 illustrations. Macmillan Co., 60 Fifth Ave., New York 11; Cambridge University Press, Bentley House, 200 Euston Rd., London, N. W. 1, 1946.

This is the Linacre Lecture of 1946 delivered at Cambridge University by the discoverer of penicillin. In discussing chemotherapy of the past, Fleming alludes to the observations of Pasteur, Lister, Ehrlich and himself. Fleming considers as his most important investigation work carried out in 1924 relating to the destructive action of antiseptics on the blood leukocytes. Leukocytes are essential for the phagocytosis and destruction of bacteria. Unfortunately, chemicals then available were not specific for bacteria alone but also destroyed the leukocytes. This work clearly defined the attributes of the ideal chemotherapeutic agent, one that would have a specific action against bacteria without altering the function of the host's tissue and blood cells. The sulfonamides constituted a definite step forward in pursuit of the ideal agent, but penicillin represents a highly potent antibacterial agent having surprisingly few toxic effects. Without any doubt, the earlier studies of Fleming alerted him for the potentialities of a fungus which appeared to destroy staphylococci on an agar plate. He concludes his lecture by appealing for the establishment in England of an institute of general microbiology in which the various disciplines of biology would be represented. This brief summary of chemotherapy should appeal to any one interested in the field.

The Nervous Child. By Hector Charles Cameron, M.A., M.D., F.R.C.P., Consulting Physician to The Children's Department, Guy's Hospital, London. Oxford Medical Publications. Fifth edition. Cloth. Price, $3. Pp. 252, with illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E. C. 4, 1946.

Since the first edition in 1919, many advances have been made in diagnosis and management of the so-called nervous child. The early chapters, on doctors, mothers and children, observations in the nursery, management and conduct, want of appetite, indigestion and want of sleep, are still as acceptable today as formerly, but there are several later chapters which are quite unscientific, outdated and in need of thorough revision. Formerly there were few good books in this field. There are now many which are more complete and are able to replace the old textbooks.

Essentials of Physiological Chemistry. By Arthur K. Anderson, Professor of Physiological Chemistry, The Pennsylvania State College, State College, Pennsylvania. Third edition. Cloth. Price, $3.50. Pp. 395, with 38 illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W. C. 2, 1947.

This volume has been revised, and certain sections have been rewritten. The text contains materials essential to students for a short course in chemistry entering medicine, bacteriology, nutrition and allied sciences. A discussion of optical isomerism has been brought up to date, glyceric aldehyde rather than lactic acid being used as an example, carbohydrate metabolism has been further developed and the section on chemotherapy, which contains newer drugs and antibodies, has been expanded. The vitamins have been brought up to date, and a chapter on blood has been added. The volume will be a good addition to a collection of books on physiologic chemistry.

Obstetricia de urgencia: Sindromes hemorragicos. Por los doctores Diego Taylor Gorostiaga, profesor suplente de clínica obstétrica normal y patológica de la Facultad de ciencias médicas de la Universidad nacional de La Plata, y Roberto Enrique Lede, jefe del servicio de obstetricia y ginecología del Hospital Petrona Villegas de Cordero. Prologo del Prof. Dr. Victorio Monteverde, profesor titular de clínica obstétrica normal y patológica de la Facultad de ciencias médicas de la Universidad nacional de La Plata. Paper. Pp. 419, with 103 illustrations. López & Etchegoyen S. R. L., Junín 863, Buenos Aires, 1946.

This book deals with obstetric emergencies. In the sixteen chapters the authors describe, illustrate and discuss the etiology, diagnosis and treatment of abortion, hydatid mole, ectopic pregnancy, placenta previa, abruptio placentae, acute torsion of the gravid uterus, rupture of the uterus, postpartum hemorrhage, bleeding elsewhere than from the uterus, inversion of the uterus and shock. An entire chapter consisting of fifty-five pages and twenty-seven illustrations is devoted to blood transfusion and the use of plasma. The text is written with simplicity, and the illustrations are numerous, clear, instructive and presented in an interesting fashion. The advice given by the authors is practical and apparently is based on an extensive experience. However, the Braxton Hicks version should be given up for the treatment of placenta previa because it is dangerous and intrauterine douches should have no place in the treatment of profuse uterine bleeding because, while the douche is being prepared and given, valuable blood is being lost. There are much quicker and more certain means of controlling uterine hemorrhage than intrauterine douches. The contents of this book may be found in all the standard textbooks of obstetrics, but it does bring together most of the emergency conditions that occur during pregnancy. For this reason it serves a useful purpose and is worthy of possession and study.

The 1946 Year Book of General Therapeutics, November, 1945-August, 1946. Edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P. Fabrikoid. Price, $3.75. Pp. 443, with 20 illustrations. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1946.

Those who are familiar with the Year Book of General Therapeutics will find in the 1946 volume essentially the usual approach for this series to therapeutic highlights for the year, in this case extending from November 1945 to August 1946. For others who have yet to make an acquaintance with the book, it may be pointed out that it consists essentially of an abstracting of current medical literature published during the year. Included are discussions of sulfonamides, sulfones, penicillin, streptomycin, amebicides, burns, antimalarials, antisyphilitics, antirheumatics, gout, serums and plasma, vaccines and other drugs such as folic acid, amino acids, hormones, vitamins, thiouracil, sedatives and those acting especially on the heart and blood vessels. If a reader wishes to have available a ready source of fairly comprehensive abstracts the Year Book will provide much help. If a reader wishes to be guided in his choice of therapy he may have to go elsewhere, as abstracts of various papers sometimes present conflicting views and, of course, occasionally present views not yet generally adopted or later disproved. There are many, however, who come to regard the Year Book series as useful additions to their libraries, and these persons will not be disappointed in the 1946 Year Book of General Therapeutics; it again provides what has come to be expected.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST

AIR TRAVEL AND HYPERTENSION

To the Editor—A woman aged 65 wishes to fly from Boston to California She has arthritis, with a blood pressure of 238/120 Could or would such a thing as hitting an air pocket cause untoward effects and possible cerebral vascular episode? Disregarding the arthritis, would her blood pressure or hypertension rule out air transportation?

David Glunts, M D , Roxbury, Mass

ANSWER—Transcontinental flying, which involves ascent to considerable altitude in crossing the Rocky Mountains, is inadvisable for a patient of 65 with hypertension of the degree mentioned in the query While it is quite possible that the trip could be made without lasting injury, the probability of intracranial or cardiac difficulties is sufficient to advise against the undertaking Histanoxia of tissues distal to the constricted arterioles is the chief source of injury to parenchymal tissues in hypertensive disease, the lowered oxygen tension of fairly high altitude flying may well be just enough to lower the oxygen supply to the brain or myocardium below critical levels This hazard is intensified if the patient is also anemic or if her hypertensive disease has progressed to arteriosclerosis Furthermore, the anxiety and excitement of such a trip can well lead to a transient but dangerous exacerbation of the hypertension Travel in a railroad compartment is the safer method for this patient

DIPHTHERIA TOXOID

To the Editor—In the care of men and women of college age, how soon after initial immunization for diphtheria with alum precipitated diphtheria toxoid should a booster dose be given, continued at what intervals and what dose used?

F F Ebersole, M D , Mount Vernon, Iowa

ANSWER—If negative Schick reactions have been obtained following immunization with alum precipitated toxoid, a booster dose would not ordinarily be given to men and women of college age However, if diphtheria was prevalent in the community it would be well to perform Schick tests annually, and then a booster dose of alum precipitated diphtheria toxoid might be given to those who had positive Schick reactions Under such circumstances, 1 cc of alum precipitated toxoid may be injected subcutaneously Nevertheless, it has been found that as little as 0 1 cc of plain diphtheria toxoid intracutaneously is sometimes sufficient to bring about a change from a positive to a negative Schick reaction

The duration for diphtheria immunity is greatly influenced by the number of injections of toxoid When three doses are administered at four week intervals, immunity persists in more than 90 per cent of the cases for a period in excess of four years

TIDAL WATER AND POLIOMYELITIS VIRUS

To the Editor—I should be grateful for information as to any recent publication concerning water-borne diseases What I have in mind is the relationship of various infections to polluted public waters, such as our Narragansett Bay, parts of which have recently been closed to shellfishing, bathing and other uses because of increasing contamination from untreated and imperfectly treated sewage Contamination of the water supply for domestic use is not under consideration Has any work been done that would indicate that salt or tidal water can spread the virus of poliomyelitis?

Paul C Cook, M D , Providence, R I

ANSWER—The broad question of water contamination is amply covered in most textbooks on hygiene or water purification

The second more specific question is "Can salt or tidal water spread the virus of poliomyelitis?" There has been much effort made to implicate water as a factor in the spread of this disease Kling in Sweden claims to have recovered the virus from water These claims have not been substantiated Water obtained in streams or bays into which raw sewage is emptied has been found to be contaminated (Detroit and Charleston) but not for long, and the virus is soon diluted to a point where it must be of little epidemiologic importance Swimming pools and drinking water have been investigated many times with fruitless results

It has not been proved that water carries virus, and even though water did carry virus it would be of little epidemiologic importance

DERMATOLOGY AS A SPECIALTY—FIRST DERMATOLOGIC AUTHORITY

To the Editor—Will you kindly inform me as to when dermatology first became recognized as a separate specialty and name the first man who became a recognized authority on dermatology?

Wallace E Hopkins, M D , Dallastown, Pa

ANSWER—The first question as to when dermatology first became recognized as a separate specialty cannot be answered in one or two words The recognition of the specialty was a gradual process lasting years and varied in different countries For instance, the founder of French dermatology, as stated in Pusey's "History of Dermatology," was Antoine C Lorry (1726-1783) It is generally accepted that the founder of British dermatology was Robert Willan (1757-1812) Dermatology was certainly recognized as a specialty in the United States in 1876, when the American Dermatological Association was founded However, the first group of dermatologists to organize was the New York Dermatological Society in 1869, largely by men who had had their special training abroad

To name the first man who became a recognized authority on dermatology is even more difficult The honor should probably go to Jean Astruc (1684-1766), who was a brilliant man, a physician to the king in Paris, and a teacher of Lorry

ANTHRAX IN ELEPHANTS

To the Editor—Because of a fatal case of anthrax that has come to my attention may I ask whether there have been any human cases of anthrax traced to infection in elephants? Specifically, have human cases of anthrax been traced to work (such as cutting or carving) with elephant tusks imported from Africa?

Roy M Seideman, M D , West Hartford, Conn

ANSWER—Reference to human cases of anthrax traced to elephants cannot be found No cases of human anthrax are known to have occurred in Africa as a result of working with elephants or from handling elephant tusks

G H Evans reports anthrax as relatively common in elephants in India

African elephants in the Belgian Congo are considered little subject to Bacillus anthracis infection "Symptomatic anthrax" caused by Clostridium chauvoei does occur in hippopotamuses in the Belgian Congo Considering the wide range of animals susceptible to anthrax, its prevalence in certain areas and the ability of anthrax spores to remain infective for long periods of time, it is not beyond the realm of possibility for anthrax to result from handling elephant tusks Tusks are invariably grooved, pitted and cracked and could conceivably harbor anthrax spores

SPASM OF ACCOMMODATION

To the Editor—What should be done for patients with *spasm of accommodation*? In a woman retinoscopy reveals plus 150 sphere each eye with working distance deducted All that she will accept is a plus 50 sphere right eye and plus 25 sphere left eye She already has been fitted with six pairs of glasses by six different doctors These lenses range from plus 2 spheres down to plus 25 sphere each eye

Donald Brink, M D , Hutchinson, Minn

ANSWER—On the basis of the information given in the query, it is not possible to establish a diagnosis of spasm of accommodation, which is an exceedingly uncommon condition A certain degree of sustained accommodation is frequently seen in young hypermetropic persons and may be considered a physiologic adaptation in the interests of clear vision

Excessive contraction of the ciliary muscle causes a relative myopia, increased actual myopia or increased latent hyperopia It may be caused by miotics, drugs such as arsenic and the sulfonamides, ocular injuries and conditions causing irritation of the ciliary body Most authorities indict excessive near work, defective illumination, uncorrected refractive errors, general debility and unstable disposition Diagnosis is based on the observations of loss of accommodative amplitude, nearing of the far point and disappearance of the refractive abnormality with cycloplegia

Treatment should be directed toward determination of the refractive error with full cycloplegia using atropine if necessary, and the prescription of the full correction as found with the ciliary muscle paralyzed In hypermetropic patients about 1 diopter is deducted to allow for the normal physiologic tone of the ciliary muscle Many patients will require instillation of homatropine solution for a week or two after glasses are prescribed to allow recovery of the ciliary muscle from its condition of irritability Near work should be forbidden for a time, its amount should be curtailed thereafter, and the general health should receive attention

TREATMENT OF CONCURRENT CARDIOVASCULAR AND NEUROSYPHILIS

To the Editor:—A man aged 51 was referred to a neuropsychiatric clinic because of convulsions and transient episodes of confusion. A diagnosis of dementia paralytica was established on the basis of typical spinal fluid findings. In addition, the patient had cardiovascular findings strongly suggestive of aortic insufficiency and syphilitic aortitis. There was no evidence of decompensation. The blood pressure was 142/20 in the left arm (in the sitting position) and 124/26 in the right arm. What treatment is indicated? Is penicillin contraindicated because of the cardiovascular involvement? Is the use of the hypertherm or of malaria contraindicated?
Fred P. Pokrass, M.D., Norristown, Pa.

ANSWER.—Treatment of active cardiovascular syphilis with a rapidly spirillicidal drug such as penicillin or neoarsphenamine or a phenarsine derivative will frequently cause sufficient cardiac damage from therapeutic shock or paradox to result in cardiac decompensation or even, though less frequently, in sudden death. The danger of using penicillin in the presence of active cardiovascular syphilis was reported by Dolkart and Schwemlein in THE JOURNAL, October 13, 1945.

Although reports of this sort are not as yet frequent in the literature, probably because of the recent introduction of penicillin in the treatment of syphilis, similar cases, reports of which have not been published, have occurred.

When confronted with concurrent cardiovascular syphilis and neurosyphilis, one should make a careful appraisal of the relative seriousness of the two complications in the individual case, together with a study of previous therapy for syphilis if any. If there has been several months of antisyphilitic therapy recently, or if there is reason to think that the cardiovascular involvement is at present inactive, there would be less danger from the use of a trivalent arsenical or from penicillin. If there has been no preparatory treatment, the risk from the immediate introduction of these drugs would be great.

In general, life expectancy from severe cardiovascular syphilis with aortic regurgitation is less than from central nervous system involvement. An effort must be made, therefore, to find a treatment for the nervous system which will not injure the heart and great vessels but will rather assist in its arrest. Tryparsamide in dosage of 2 to 3 Gm. once a week intravenously will answer the purpose of treating the central nervous system without injuring the heart. A pentavalent arsenical such as tryparsamide has little effect on the cardiovascular system. Its use could be accomplished with courses of bismuth subsalicylate intramuscularly for the cardiac involvement given once a week for eight to ten weeks with a rest period of six to eight weeks between courses. It would be best to start with subtherapeutic doses of the bismuth preparation, perhaps 0.5 to 1 cc. (30 to 60 mg. of bismuth metal) once a week for the first six to eight weeks before increasing to a full weekly dose of 2 cc. (120 to 130 mg. of bismuth metal) After four to six months of such treatment, if it is well tolerated, the cardiovascular process should be rendered less active and it might be possible, after consultation, to consider the cautious use of penicillin at that time for the central nervous system involvement if the progress with tryparsamide has not been satisfactory. Involvement of the optic nerve is, of course, a contraindication to the use of tryparsamide, but the risk here also would have to be weighed in the light of the other activity described.

There is no absolute contraindication to the use of fever therapy in a case such as the one described in the query. In fact, patients with minor degrees of cardiovascular involvement and even with aneurysm tolerate fever therapy well if they are not decompensated. Such a decision depends on individual appraisal of the patient, however, and in general it would be safer to employ tryparsamide rather than malaria or hyperthermy in treating a patient with severe aortic regurgitation.

FLEXIBLE KONE DIAPHRAGM

To the Editor:—What is the general opinion among competent gynecologists as to the use of rubber cervical diaphragms which are known as "flexible kone diaphragm."
R. P. Fruehauf, M.D., Superior, Wis.

ANSWER.—As far as is known, no competent gynecologist or any other physician has published a paper on the use of the "flexible kone diaphragm." No physician's name is mentioned in the advertising circulars concerning the diaphragms, so most likely there have not been any scientific publications about this instrument. The points of merit claimed by the manufacturers for the flexible kone diaphragm are that (1) it is easy to apply, (2) it is easy to remove, (3) it is scientifically correct, (4) it is nonirritating, (5) it is comfortable while in use, (6) it is noninjurious, (7 there are no troublesome after-effects and (8) it may be kept in stock for three years without loss of resiliency. The stem of the flexible kone diaphragm consists of a flexible chromium wire coil spring covered with soft para rubber. A soft pliable rubber cap is attached at the lower end of the stem and soft rubber oval cones are fastened to the stem.

The manufacturers of the flexible kone diaphragm also make and sell the flexible kone pessary, which "consists of a framework of especially made pliable, rustless chromium wire of small diameter covered with a coating of pure soft rubber, approximately 1⁄32 of an inch thick. At one end of the pessary are two prongs and at the other end is a soft rubber button about the size of a nickel. On the stem (1¼ inches in length) are three soft rubber cones so placed as to fit the fusiform canal of the cervix. . . ."

Reports in the literature have pointed out the dangers attending the use of intrauterine wishbone pessaries. These are foreign bodies which often lead to infection of the uterine cavity, tubes and peritoneum. There is also risk of perforation of the uterus. In some cases the prongs become embedded in the uterine wall. Extrauterine pregnancy as well as intrauterine gestation has occurred in the presence of a stem pessary.

While the 1⁄32 inch rubber covering of the chromium wire may add some protection, the insertion of the instrument within the cervix or in the cervical canal and uterine cavity places it in the category of objectionable foreign bodies capable of doing harm.

J. P. Greenhill (1939 Year Book of Obstetrics and Gynecology, p. 411) says that "all gynecologists are agreed on the harmfulness of paraphernalia which is placed in the cervical canal or uterine cavity for purposes of preventing conception. Not only may these devices be harmful and occasionally fatal but they are by no means certain in preventing conception. Therefore, because of their ineffectiveness and their great danger and because there are many far simpler and safer procedures, mechanical devices should never be inserted into the cervical canal or the uterine cavity for the purpose of preventing conception."

CHOICE OF ESTROGENIC COMPOUND FOR MANAGEMENT OF MENOPAUSE

To the Editor:—A woman aged 53, fout years past the menopause, is able to control hot flashes and palpitations by diethylstilbestrol 0.5 mg. every other night. In two weeks' time, however, "spotting" begins and lasts until the diethylstilbestrol is discontinued. Increased dose results in increased flow. Physical and gynecologic examination is otherwise negative. Is there any other estrogen, preferably oral, that does not have this effect? Is it advisable to do a diagnostic curettage in this case? If so, how soon after discontinuing diethylstilbestrol should this be done? Is it safe to continue this medication despite bleeding?
M.D., California.

ANSWER.—There is a rather large number of compounds which possess estrogenic effect and may give relief to women who are suffering from the menopausal syndrome. These compounds are not necessarily related chemically but they still have this therapeutic effect in common. Nevertheless there are minor qualitative variations in their physiologic effects on tissues. For example, estradiol will enhance the effect of progesterone on the endometrium under certain conditions, while diethylstilbestrol may actually inhibit the action of progesterone. There seems to be a definitely higher incidence of estrogenic bleeding in the menopausal patient on diethylstilbestrol than with most other estrogens. The production of hyperplasia of the endometrium seems also to be more easily accomplished with diethylstilbestrol than with some of the other compounds. The exact reasons for this are not well known, but it is acknowledged that diethylstilbestrol has a somewhat different metabolic fate than the natural estrogens such as estrone and estradiol. It is therefore suggested that to avoid uterine bleeding other oral estrogens be used such as estrone sulfate, benzestrol or ethinyl estradiol. It is also suggested that some of the injectable diethylstilbestrol compounds such as the propionate or the palmitate may be found effective in controlling the patient's symptoms and still not produce the unwanted uterine bleeding. This may appear confusing, but it should be remembered that these compounds are absorbed slowly from the site of injection and the effective amount in the blood stream at any one time is probably small and will not produce bleeding because this phenomenon seems related to the rapid absorption of estrogens, with the development of sharp peaks in estrogen blood levels.

It is not wise to continue diethylstilbestrol by mouth while the patient is bleeding from the uterus, since hemorrhages may actually occur under these conditions. Four to five weeks after discontinuing diethylstilbestrol should be sufficient time before the new oral estrogens are attempted or the injectable estrogens administered. There appears to be little need of a curettage if the physician is convinced that the cause of the bleeding is due to estrogen therapy.

TURPENTINE FUMES AND REACTIVATION OF TUBERCULOSIS OF KIDNEY

To the Editor.—A man aged 45, a painter in previous good health, while working in a closed room using oil and turpentine paints became violently ill from the fumes, resulting in severe renal irritation, including classic symptoms of nephritis and cystitis. He never recovered his health and subsequently, within a period of weeks, was found to have a flare up of an old healed renal tuberculosis. Roentgenograms of the lungs did not reveal any pulmonary tuberculosis. He underwent a nephrectomy, and subsequent repeated cultures of the urine did not show further tuberculosis either of the bladder or of the surviving kidney. He still has frequency of urination and some suprapubic discomfort, but cystoscopy does not show gross pathologic changes. His claim for compensation was turned down and he is now appealing the case. Granted that tuberculosis is caused by the Mycobacterium of tuberculosis, would acute turpentine (and other paint solvents) nephritis cause the exacerbation of the latent renal tuberculosis? Would cystitis caused by turpentine explain the continued bladder symptoms, since further genitourinary tuberculosis has been ruled out?

M. D., Arizona.

Answer.—There is no doubt that turpentine absorbed in sufficient amounts can cause severe acute renal damage with parenchymal necrosis and hemorrhage. Irritation of the lower urinary tract, including the bladder, is also an accepted fact. The question of the relation between the acute injury of the kidney by turpentine and the flare-up of an old healed renal tuberculosis cannot be answered without more detailed knowledge of the type of renal tuberculosis, of the evidence for its healed state and of the appearance of the gross and microscopic changes in the removed kidney. As in the case of the relation of trauma to tuberculosis, two mechanisms for reactivation of the infection are possible: (1) the local extension of tuberculosis from a latent focus due to direct injury of surrounding tissues and the opening up of pathways for the spread of tubercle bacilli, (2) the flare-up of local infection due to lowering of the patient's general resistance.

It is therefore debatable whether severe turpentine injury of the kidney might have damaged the region surrounding the old tuberculous focus enough to initiate a rapid local spread, or whether the deleterious general effects of turpentine poisoning lowered the patient's resistance and thereby led to the reactivation of the renal tuberculosis. The time interval between the onset of symptoms due to turpentine and the flare-up of the renal tuberculosis would seem to be appropriate for a causal connection between them, assuming that the patient was really free from symptoms of active renal tuberculosis previously.

The continuing bladder symptoms could scarcely be attributed to the original irritation by turpentine in view of the absence of objective findings and the lapse of time. Some other cause, including the possibility of a functional basis, should be considered.

The possibility that other paint solvents were responsible for the renal irritation is rather remote. At any rate, turpentine by itself could easily account for the symptoms.

SEMINAL FLUID EXAMINATION, EFFECT OF ABSENT TESTIS OR VARICOCELE

To the Editor.—What is the accepted "rough" method of making a sperm count which can be used in office practice? What are the limits of normal and the accepted criteria for determining whether a male is fertile? Does loss of one testis lower the sperm count? Would a symptomatic varicocele lower the sperm count? M. D., Pennsylvania.

Answer.—There is no "rough" method of making an examination of the seminal fluid to determine whether or not a man is fertile. The accepted procedure for seminal fluid analysis is as follows: After the man has abstained from sexual intercourse for five to six days, the seminal fluid is collected in a small beaker by having the patient ejaculate the semen directly into the container by artificial means. Condom specimens are not accurate. After liquefaction of the seminal fluid has occurred, which in normal specimens is from ten to fifteen minutes, the amount of semen is accurately measured in cubic centimeters. A small drop is then placed on a glass slide and sealed with a cover slide. The motility and percentage of active spermatozoa are estimated by using the high dry objective. Pus cells and bacteria are searched for. In normal specimens about 80 to 90 per cent of the spermatozoa show active motility. The longevity of the spermatozoa can be determined by drawing a small amount into a fine glass tube, sealing both ends, placing it in a refrigerator and making routine observations. Under ordinary ice box temperature, spermatozoa will be active after twenty-four to forty-eight hours.

To count the spermatozoa a sample is drawn up to the 0.5 mark in the white cell counting pipet while it is held nearly horizontal. A solution containing 1 per cent solution of formaldehyde and 5 per cent sodium carbonate in water is then drawn up to the 11 mark. The dilution is 1:20. A drop of the diluted seminal fluid is allowed to flow under the cover glass of the counting chamber. After allowing about five minutes for settling, one counts all the spermatozoa in the four large squares (each one 1 mm. square and 1 mm. deep), using the high dry objective. The total number of spermatozoa counted is then multiplied by 20 (for dilution) divided by 4 (number of cells counted) multiplied by 10 (for cubic millimeters, since the depth of the counting chamber is 0.1 mm.) and by 1,000 for cubic centimeters. The result obtained is the number of spermatozoa in 1 cubic centimeter. To obtain the total number of spermatozoa ejaculated, the number in 1 cc. of seminal fluid is multiplied by the volume of seminal fluid. Normal specimens contain around 100,000,000 spermatozoa per cubic centimeter, or a total number of 250,000,000. A fertile man should have at least a total of 100,000,000 spermatozoa. However, there are many other factors besides the number of spermatozoa that enter into a normal seminal fluid. The morphology of the spermatozoa should be studied, for this there are many different staining methods which can be obtained in any of the standard textbooks on fertility.

The absence of one testis, if the other one is normal, will not appreciably influence the total number of spermatozoa. Varicocele would lower the spermatozoa count if the testis on the side of the varicocele is not normal and the other testis is abnormal. However, if the other testis is normal and the seminal fluid analysis is within normal limits, the patient is potentially fertile.

MAGNESIUM SULFATE FOR VERTIGO AND MENIÈRE'S DISEASE

To the Editor.—A patient with severe vertigo has been treated and reports cure from the intravenous injection of 50 per cent solution magnesium sulfate 2 cc. three times weekly and ammonium chloride by mouth. She stated that during injection she felt as if she was burning up, but this passed off in a few minutes and she felt perfectly well, having no more dizziness for some months. Is the intravenous injection of magnesium sulfate in this manner beneficial and safe?

M. D., Indiana.

Answer.—Magnesium sulfate has not been used extensively in the treatment of vertigo. Its dominant action physiologically consists of depression and inhibition. Given parenterally it has a diuretic effect. The magnesium ion is toxic when high concentrations accumulate in the extracellular fluid. If the kidneys are functioning in a normal manner magnesium is so rapidly excreted that change in blood level of the ion cannot be detected. The drug should not be employed in subjects who have renal insufficiency.

Schick reports its use in the treatment of 18 subjects with Meniere's syndrome who apparently had been refractory to other forms of treatment. The treatment consisted in intravenous injections of 5 cc. of 50 per cent magnesium sulfate solution administered two or three times weekly. The number of injections ranged from ten to twenty, depending on the response and the severity of the symptom complex in each individual. Each injection was administered at an extremely slow rate with the patient in the recumbent position. By carefully observing these precautions the patients did not observe any ill effects from the drug.

Of the 18 patients treated, 7 did not experience attacks during a control period of fourteen months, 7 noted definite improvement and 4 noted no change.

AMPHETAMINE COMPOUND AND WEIGHT REDUCTION

To the Editor.—What is the value of dexedrine sulfate, recommended to curb the appetite in cases of obesity? Is it safe? I realize that dietary restriction is the scientific approach to this problem, but to keep these patients on a diet is more theoretical than practical.

Nathan J. Frenn, M. D., Bark River, Mich.

Answer.—Amphetamine (benzedrine) sulfate and its dextrorotatory component dexedrine sulfate have been widely advocated in the treatment of obesity, since they curb the patient's appetite and maintain his feeling of well being despite a low caloric intake. However, as soon as the drugs are withdrawn the appetite returns in full and, unless a new food pattern has been established, the patient generally is unwilling to adhere to his former diet. There is also danger of habit formation, especially since the type of patient who is unable to restrain his appetite by his own will power will be one prone to habituation. Disagreeable side effects of a minor nature include insomnia, anxiety and palpitation.

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THE MEDICAL SEQUELAE OF THE ATOMIC BOMB EXPLOSION

GEORGE V. LeROY, M.D.
Chicago

The Army and Navy medical missions which investigated the results of the explosion of the atomic bombs in Hiroshima and Nagasaki, Japan, studied many aspects of the situation. In this article it will be impossible to review all the studies that were made; only two major subjects will be considered. The two most impressive features of the new type of bomb are: (1) the tremendous toll of casualties and (2) the syndrome of injury due to large amounts of gamma radiation.

In the bombed cities the Air Raid Defense authorities and the surviving members of the medical profession were confronted with an extremely large relief and rescue problem. The magnitude of their task is indicated by the following estimates (table 1):

Table 1.—*Atomic Bomb Casualties*

	Hiroshima	Nagasaki
Population	300,000	200,000
Dead	80,000	40,000
Injured	40,000	25,000
Patients in need of immediate care	85,000	50,000

Of the total number of casualties, 120,000 in Hiroshima and 65,000 in Nagasaki, not all were in need of immediate medical care. In each city about one sixth of the total number of casualties were killed instantly or died under circumstances in which no help was possible. They were burned to death by the direct heat of the bomb, were crushed under demolished buildings or trapped in burning débris. A somewhat smaller group, perhaps one seventh of the total number of casualties, escaped both mechanical injuries and burns but received a dose of gamma rays sufficient to make them become sick one to five weeks later. On the basis of these rough estimates, it can be said that approximately 85,000 persons in Hiroshima and 50,000 in Nagasaki required medical care on the day of the bombing.

The type of injuries that required treatment can be appreciated readily from a brief review of the characteristic products of the explosion of an atomic bomb. At the instant of their detonation high above the ground these bombs generated an incredible amount of energy, of four main kinds: mechanical, heat, light and ionizing radiation (alpha, beta and gamma rays and neutrons). There was some variation in the length of time that each form of energy was effective in the production of damage and casualties; but in general the duration of time was of the order of 1 second (table 2).

The mechanical energy produced was in the form of an air blast, or concussion, sufficiently strong to crush reinforced concrete structures directly beneath the bomb; to wreck steel-framed factories at distances as great as 4,700 feet (1.4 kilometers) from the center of the effect; and to demolish Japanese type wooden houses as far from the center as 8,000 feet (2.4 kilometers). In each of the bombed cities practically every building was damaged in some way; and windows were shattered and roof tiles blown off as far as 3.5 miles (5.6 kilometers) from the explosion.

The heat at the center of the exploding bomb has been described in the newspapers as greater than that in the center of the sun. No reasonable estimate of the actual temperature of the reaction has been released officially, but it was almost unbelievably great, judging by the effects. During the fraction of a second that it lasted, inflammable objects were scorched or set afire as far from the source as 11,000 feet (3.3 kilometers). Practically every person who was in any position in a line of sight relation to the flaming airburst sustained burns of the exposed parts of the body that faced the blast. The burn was of the flash type, so that almost any object or material that happened to be located between the source of heat and the victim protected parts that were under cover or in the shadow (fig. 1). Close to the center, however, the heat was so intense that burns occurred under clothing. An interesting relation to the color of such clothing was seen, and the skin under dark material was burned more severely than that under white cloth. Bizarre designs were produced on the skin of patients whose clothing was of patterned material. People received flash burns serious enough to warrant treatment at distances as far from the center of the explosion as 13,000 feet, or 2.5 miles (3 kilometers).

Table 2.—*Casualty-Producing Agents Resulting from Explosive Nuclear Fission in an Atomic Bomb*

1	Mechanical energy "blast"
2	Heat
3	Light (visible, infra-red and ultraviolet)
4	Ionizing radiation (alpha, beta and gamma rays) and neutrons

The bright light that accompanied the explosion has been described as many times more intense than that of the sun. It may be thought of as comparable to sunlight concentrated by a "burning glass," and in this

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Read before the Section on Internal Medicine at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 4, 1946.

Member, Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan. Chief of Division, Manhattan Department, University of Rochester.

This article is an abstract of a report submitted to the Surgeon General of the United States Army. The preparation of the report was the joint responsibility of Drs. Ashley W. Oughterson, New York; Shields Warren, Boston; Averill A. Liebow, New Haven, Conn.; E. Cuyler Hammond, New York; Henry L. Barnett, New York, and George V. LeRoy. Any opinions expressed are not necessarily those of all the colleagues, to whom, however, I am indebted for the use of the material.

sense it increased the amount of heat which caused the flash burns. Ultraviolet rays formed a part of the emission and caused typical conjunctivitis in some of the victims.

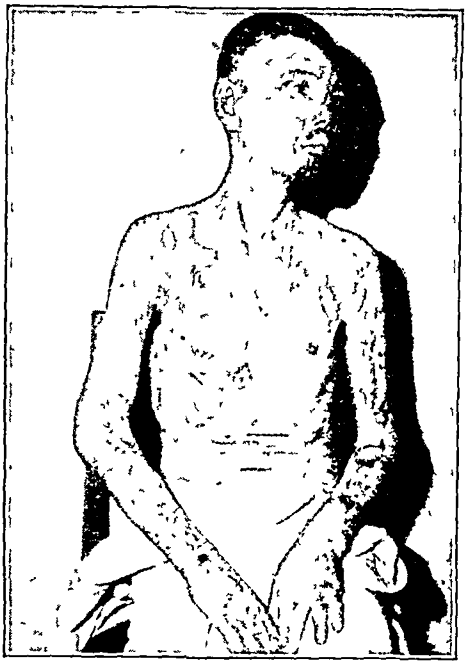

Fig. 1.—Example of extensive flash burn, some of which occurred under clothing Note the sparing of the eyelids and the anterior surface of the neck.

Ionizing radiation, consisting principally of gamma rays harder than those produced by any electrical apparatus known, were *emitted in amounts which can only* be guessed. Alpha rays, beta rays and neutrons were also produced, but the relation of these to the production of casualties is not at all clear.

With this knowledge of the products of the complex reactions that accompanied the splitting of the nuclei of atoms of uranium 235 and plutonium 239, it is possible to make a reasonable prediction of the sort of injuries that the victims of the bomb would have. In the confusion that followed the bombing few clinical records were kept in the aid stations, but enough information has been collected to permit the following estimate of the several types of injury (table 3):

Table 3.—*Classification of Injuries Due to the Atomic Bomb*

Wounds	70%
Burns	65 to 85%
Radiation injury	More than 30%

Data obtained from one large military hospital provided an approximate breakdown of the major types of wounds (table 4):

Table 4.—*Classification of the Major Types of Wounds*

Fractures	11%
Laceration, mainly due to fragments of glass	37%
Contusions	52%

(Source Ninoshima Hospital, Hiroshima)

These injuries resembled those that would be seen after hurricanes, earthquakes and to some extent after ordinary air raids. There were few blast injuries of the sort caused by high explosive bombs, however. Traumatic amputations, evisceration and general disintegration was infrequent. Few persons with extensive third degree burns lived long enough to receive medical attention, so that about 90 per cent of the burned patients in the aid stations and hospitals exhibited second degree burns. Less than 5 per cent of the burns were caused by the fires in damaged buildings and among the débris. The majority differed from ordinary flash burns only in the fact that the burned areas were darker in color than is usual.

The one unique type of injury caused by the atomic bomb was the syndrome due to gamma radiation—or simply radiation injury. It is not possible to state the precise dosage of gamma rays that any person or group of persons received in either Japanese city. It is equally difficult to estimate the amount of irradiation on the basis of the symptomatology because of the scarcity of information on the effect of large amounts of total body radiation in human beings. Guesses based on animal experiments are open to objections too numerous and too well recognized to be repeated here. The intensity of the gamma radiation emitted by the bombs decreased with the distance from the source in accordance with the law of the inverse square; and this is one of the two factors respecting dosage which can be discussed with certainty. The other is the well known ability of different types of matter to absorb gamma rays to a varying extent. Therefore, as might be expected, people inside heavily constructed buildings or in underground shelters were less severely affected than others at a comparable distance from the source who were in the open or in wooden structures. The amount of earth, brick or concrete necessary to give total protection from the gamma radiation of an atomic bomb at various distances is being studied intensively at present.

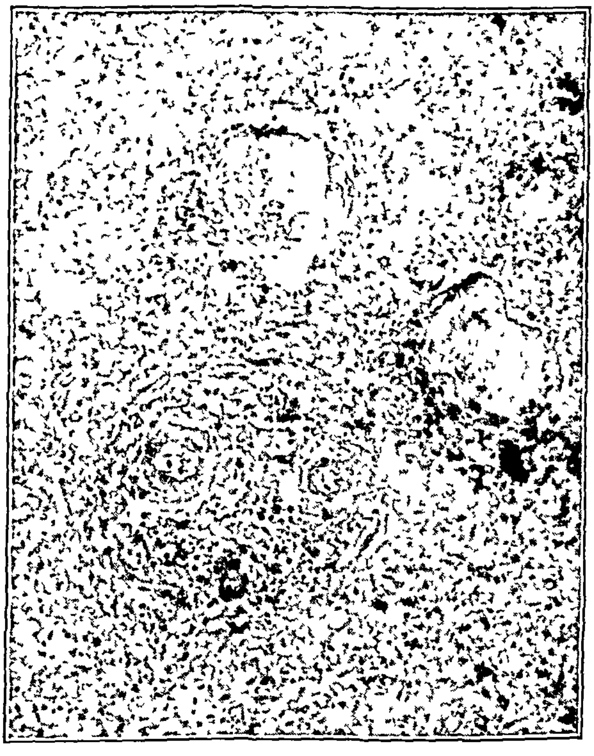

Fig 2—Spleen of man aged 24 who died five days after exposure to the atomic bomb. The field shows disappearance of lymphocytes from malpighian corpuscles, cytolysis of lymphocytes and fibrinoid changes in subendothelial portion of central artery, × 200

It was difficult to obtain precise information about the early symptoms of patients with radiation injury. It appeared that the majority experienced nausea and vomiting several hours after the bombing and that the symptoms were of rather brief duration. The course of the individual patient after that time depended mainly on the amount of radiation that he had received. Because of the complications in the clinical picture caused by burns and wounds, the description of the syndrome of radiation injury which follows is based largely on a study of patients with no other type of trauma.

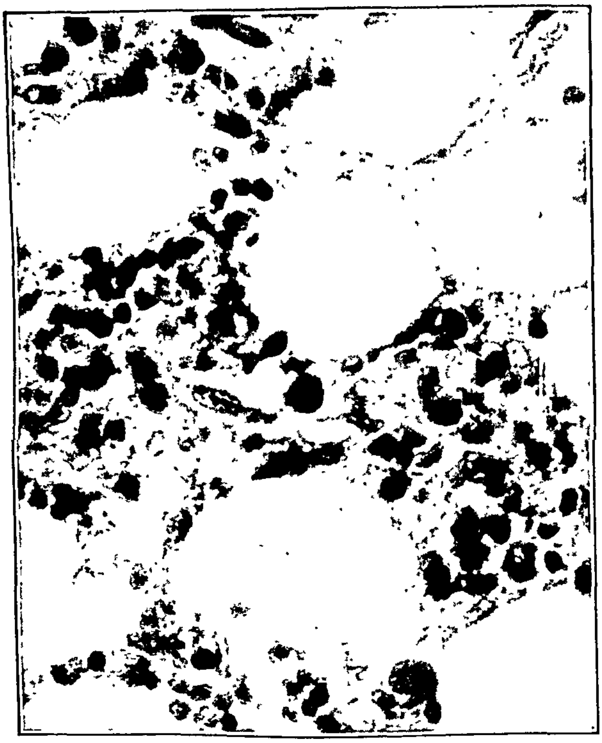
Fig. 3.—Bone marrow of man aged 39 who died seven days after bombing. The section shows a proliferation of reticuloendothelium and many plasma cells and lymphocytes. There are a few normoblasts remaining; × 650.

In those who received the largest doses of gamma rays, symptoms of fever and diarrhea were usually present on the day after the bombing (table 5 *A*). Purpura appeared approximately four to seven days later; the patient failed rapidly and died suddenly. Examination of the blood showed a pronounced reduction or a total lack of leukocytes and blood platelets. The urine was said to have been red in some cases, but few reliable reports were found. At autopsy[1] the observations were those of a moderate purpura hemorrhagica with widespread petechiae and a hemorrhagic erosion of the mucosa of the gastrointestinal tract.

Table 5.—*Onset of Symptoms of Radiation Injury*

	A Most Severe	B Severe	C Moderately Severe
Vomiting	Day of bombing	Day of bombing	Day of bombing
Fever	2-7 days	14-28 days	
Diarrhea	2-7 days	4-21 days	14-35 days
Leukopenia	2-7 days	7-28 days	7-28 days
Purpura	4-7 days	14-28 days	
Epilation	....	7-28 days	14-35 days
Mucous membrane ulceration	....	14-28 days	14-28 days
Anemia	....	7-28 days	10-35 days
Death	4-10 days	10-42 days	30-90 days

In one group of autopsies in this early stage, subarachnoid hemorrhage was found in 60 per cent of the patients. The bone marrow was pale, and the spleen and lymph nodes were small. Sections of spleen (fig. 2) and marrow (fig. 3) from typical cases are presented. Briefly, the important feature of these tissues is the disappearance of normal lymphocytes and marrow cells, so that only the stroma and the framework of the organs remain. There is evidence even at this early stage of a beginning of regeneration as seen in the proliferation of the reticulum. The general pattern of the observations in these cases resembles closely that described by Shouse, Warren, and Whipple[2] in dogs receiving large single doses of roentgen rays.

In the period between seven and twenty-eight days after the explosion of the atomic bomb symptoms developed in the majority of those affected by gamma radiation. The syndrome which appeared at this time was manifested by epilation, gastrointestinal disturbances (of which intractable diarrhea was the most frequent), purpura, fever, leukopenia and anemia (table 5 *B*). Associated with these primary phenomena were any of the complications which might be expected. Laryngitis, pharyngitis, tonsillitis and gingivitis developed in most of the patients. In the more severely afflicted these lesions, as well as lesions in the trachea, the bowel and the female genitalia, became progressive and severe necrotic ulcerations. This process differed in no way from that seen in agranulocytic angina from any cause. Petechia and purpura appeared in the skins of almost all the patients, and with the advent of the hemorrhagic tendency, epistaxis, melena, metrorrhagia and hematuria were regularly observed. Epilation (fig. 4) involved chiefly the scalp and was quite characteristic in appearance. The hairs of the crown fell out first, so that many of the victims appeared to have a monk's tonsure. The loss of hair was complete in only a few patients, and in the majority it began to grow again within two or three months' time. Epilation of other hairy parts of the body was infrequent. Laboratory studies at this time showed little that was abnormal except in the examination of the blood and bone marrow. Leukopenia was universal in patients with radiation injury when counts were made at an appropriate time. Values as low as 100 white blood cells per cubic

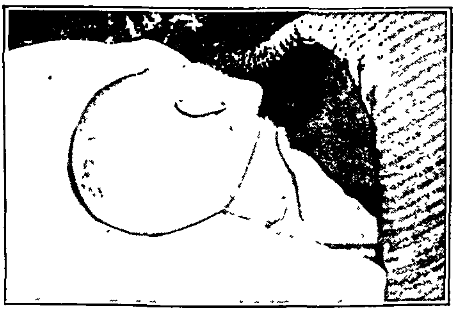
Fig. 4.—Example of epilation in a woman, showing almost total alopecia. The photo was made in October, twelve weeks after the bombing.

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[1] Protocols and complete descriptions of all the autopsy and clinical material obtained in Japan will be described in the Report of the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan. To be published.

[2] Shouse, S. S.; Warren, S. L., and Whipple, G. H.: II. Aplasia of Marrow and Fatal Intoxication in Dogs Produced by Roentgen Radiation of All Bones, J. Exper. Med. 53: 421-445, 1931.

millimeter were reported, and the majority of the heavily irradiated patients had white blood cell counts below 1,500. Recovery appears to have been rare among patients whose white cell count was less than 600 per cubic millimeter. Examination of stained blood films at that time revealed mainly lymphocytes. Anemia was present in all such patients and became progressively more pronounced for a period of one to two weeks after the maximum depletion of the white count was observed. The purpura and the hemorrhagic tendency increased the anemia, and patients in whom this was a prominent feature of the syndrome did poorly. Associated with the leukopenia and the agranulocytic type of ulceration, there occurred overwhelming infections, many of which became septicemias. This condition and pneumonia seem to have been the chief causes of death in this stage. The mortality rate for this form of the syndrome of radiation injury is not known. Some Japanese physicians said that it was 100 per cent; but it is more likely that a fair estimate would be between 50 and 75 per cent. In small groups of persons treated in a university hospital the mortality rate was about 33 per cent. When this type of radiation injury developed in a burned or wounded patient, however, the prognosis was much worse because of the increased suppuration of the wounds. Sections of representative tissues from patients who died at this time are illustrated. The bone marrow (fig. 5), the spleen (fig. 6), the testis (fig. 7) and a section of burned skin (fig. 8) with no polymorphonuclear reaction are presented. The failure of spermatogenesis was constant in patients who were exposed to sufficient gamma radiation to produce clinical symptoms, and the extent of the process is evident from the illustration.

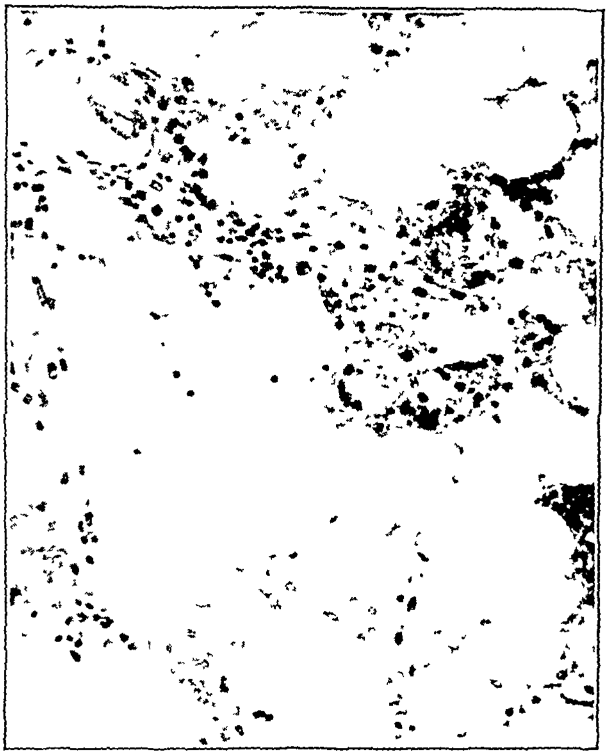

Fig 5—Bone marrow of man aged 29 who died twenty nine days after the bombing The section shows hypoplasia, a necrotic area and bacteria. The majority of the cells are reticulum cells, plasma cells and lymphocytes, × 230

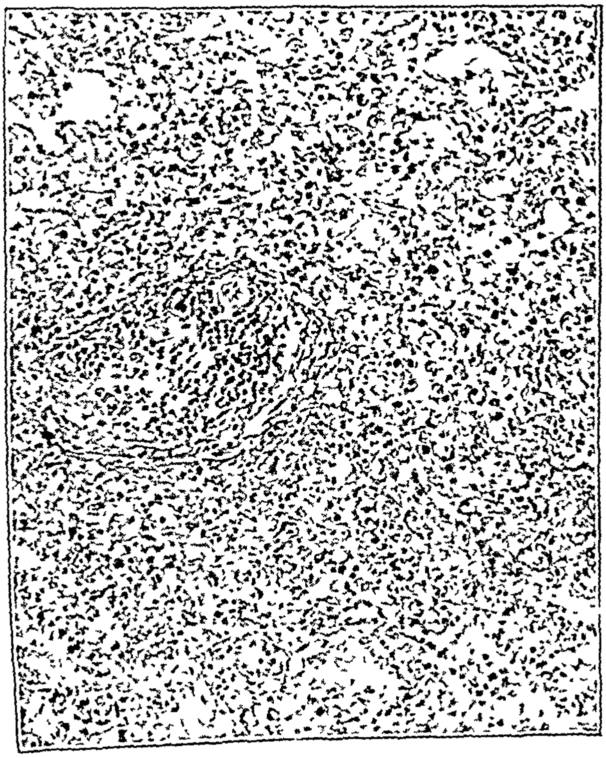

Fig. 6—Spleen of woman aged 35 who died nineteen days after the bombing. The section shows atrophy of the lymphoid tissue, with karyolysis of some of the cells in the vicinity of the central arteriole The arterioles show a deposition of hyalin like material beneath the endothelium; × 160

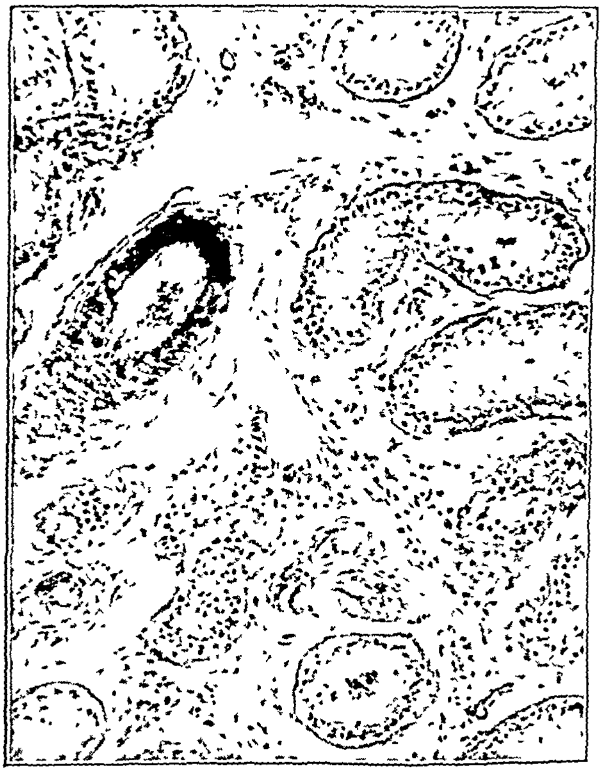

Fig 7—Testis of man aged 22 who died twenty six days after the bombing The section shows necrotic remnants of germinal epithelium and its derivatives in the lumens of tubules, edema of interstitial tissues, and hyaline subendothelial changes in small blood vessels, × 125

A less severe form of the syndrome of radiation injury occurred. In these patients epilation, if it occurred at all, was observed during the third to fifth week after the bombing (table 5 C). The constitutional symptoms of fever, gastrointestinal disturbances and prostration were conspicuously less serious. The other characteristic clinical phenomena in this group were weakness, malaise, diarrhea and mild inflammation of the mouth, gums and throat. Examination of the blood at an appropriate time revealed leukopenia, but white blood cell counts were seldom lower than 1,500 per cubic millimeter. The number of blood platelets was reduced, and anemia was a constant and often progressive feature. Frank ulceration of the inflamed mucous membrane was infrequent and tended to be transitory. Petechia appeared in rather small numbers of patients, and the hemorrhagic tendency was never extreme. Anemia was the most conspicuous element in the symptomatology; some of these patients never recovered but died two to four months later with an aplastic anemia. Sections from such a patient show poorly regenerating marrow (fig. 9) and testicular tissue (fig. 10).

The most important pathologic changes in the tissues may be summarized briefly. The bone marrow was badly damaged, and there was an almost complete disappearance of all cells of the myelopoietic and erythropoietic series. However, in all but the most severely irradiated patients regeneration of the bone marrow was evident within seven to ten days after the injury. The type of tissue which regenerated varied considerably and frequently after three or four weeks the marrow appeared to be producing mainly macrophages, plasma cells and lymphocytes, with only insignificant numbers of definitive cells. In other cases a well-established myeloid and erythroid hyperplasia was evident at this time, and in tissues obtained later this process was often spectacular. The lymphatic organs all were badly damaged, and material from the earliest cases contains few or no lymphocytes in the nodes, the spleen and the thymus. Recovery of these tissues was evident after a few weeks, as a rule, but they never displayed the degree of hyperplasia that the marrow did. In many patients who died several months after irradiation, the lymphatic tissues still contained only a fraction of the usual number of adult-type lymphocytes. The testes

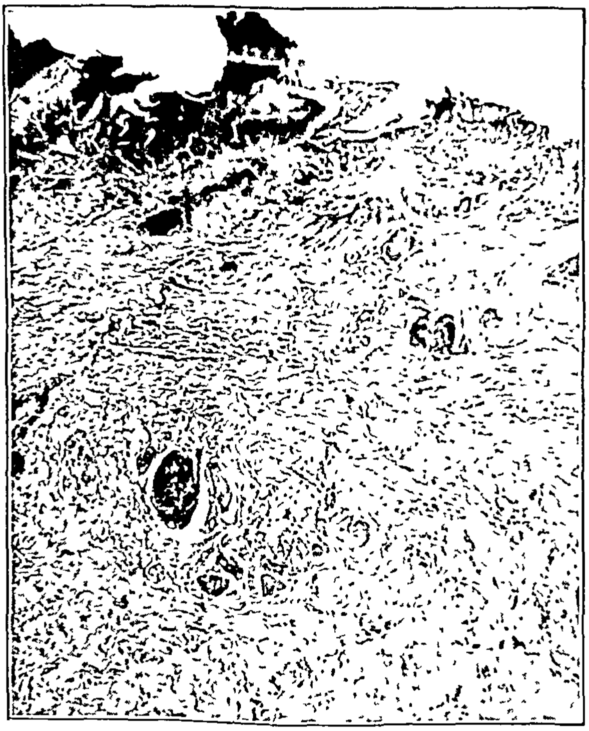

Fig. 8.—Skin of man aged 39 who died seven days after the bombing. The section shows burned skin, with necrosis of epidermis and outer layers of the dermis. Masses of bacteria are present, but there is no leukocytic infiltration whatever; × 50.

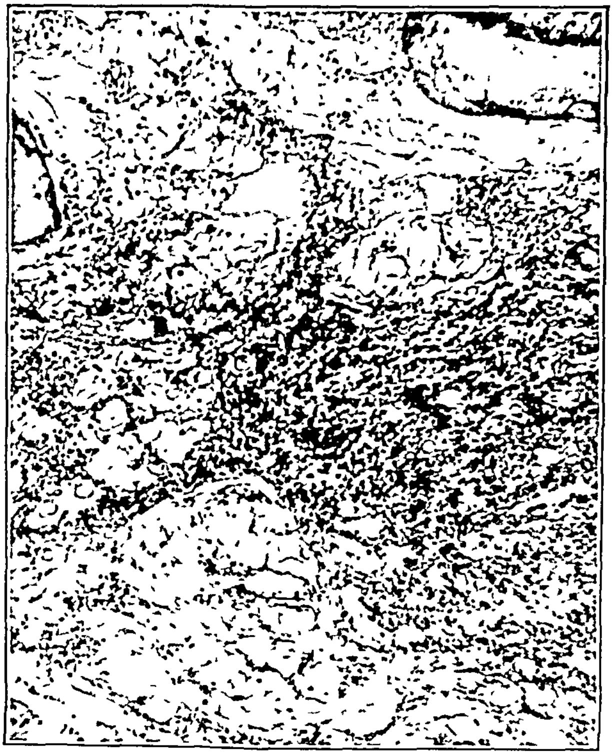

Fig. 9.—Bone marrow of man aged 31 who died fourteen weeks after the bombing, of bronchiectasis. The section shows gelatinous marrow from the rib, in which there is a large focus of regenerating cells replacing the fat; × 115.

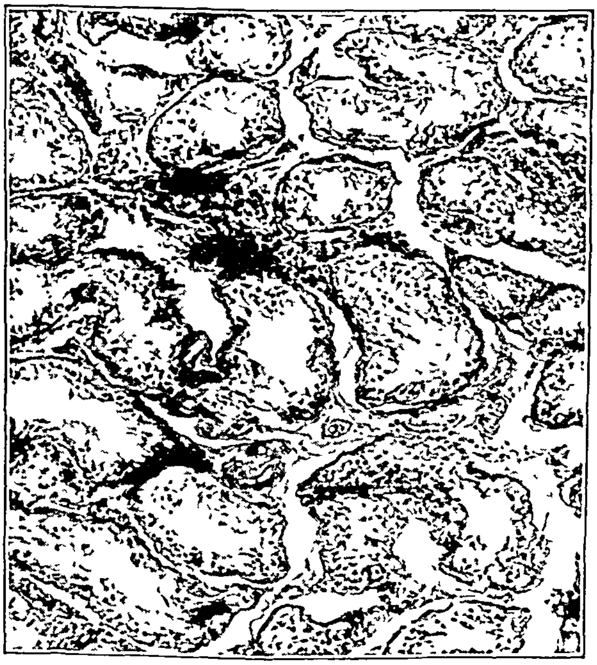

Fig. 10.—Testis of man aged 31 who died fourteen weeks after the bombing, of bronchiectasis. The section shows complete cessation of spermatogenesis. The tubules whose basement membranes have not become thickened are lined with cells of Sertoli. The interstitial tissues are not hyperplastic; × 115.

were affected in the majority of men who received enough gamma radiation to cause symptoms. Spermatozoa were absent from the tubules, and most of the spermatogenic tissue was replaced by proliferating cells of Sertoli. As a corollary of this damage, changes of the type seen in castrated persons were apparent in the pituitary gland. The tissues of the female reproductive system were affected to a much smaller extent. The changes in the skin and in the hair follicles were prominent and resembled the type seen after treatment with roentgen rays.

The therapeutic problems that were presented by these patients with severe injury due to exposure to large doses of gamma radiation can be summarized quickly: The two major phenomena which endangered life were the gastrointestinal disturbances and the destruction of the hematopoietic tissues. The intense diarrhea and vomiting and the ulceration that occurred throughout the bowel created a serious situation. There is no doubt that many patients died from this cause alone with dehydration and acidosis. The damage to the bone marrow was even more serious, although it appears from histologic studies that regeneration of a sort commenced soon after the injury. Severe leukopenia which persisted for a period of one to three weeks was certain to facilitate the development of overwhelming infections in any part of the body. The inability of the leukopenic organism to localize such infections could result in the development of septicemia. The hemorrhagic state which accompanied the thrombocytopenia was capable of causing exsanguination from the ulcerated mucous membranes or from wounds as well as fatal hemorrhages in the central nervous system, the myocardium or the adrenal glands.

The proper objectives in the treatment of patients who have been exposed to the amount of gamma radiation emitted by an exploding atomic bomb are quite clear and can be stated simply (table 6):

TABLE 6.—*Therapeutic Objectives in Management of Patients with Radiation Injury*

1 Maintain fluid and acid-base balance
2 Control infectious processes
3 Combat hemorrhagic tendency
4 Correct the anemia

It does not seem unreasonable to believe that in the hospitals of the western world where plasma, electrolyte solutions, whole blood and penicillin are available in adequate amounts, a much lower mortality rate could be achieved than was observed in Japan. How satisfactory the thoroughly modern treatment of the syndrome of radiation injury might be is difficult to predict.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. VERNE R. MASON, Los Angeles: I should like to call attention to certain details about which Dr. LeRoy did not have time to elaborate. First, the changes in the bone marrow are not constant from day to day or week to week but represent a dynamic process that is going on. Dr. LeRoy has a large number of slides and a large amount of statistical material and, when he gets these all together, will make an amazing picture of what actually goes on in the bone marrow of persons who have had very large doses of gamma-ray radiation to the total body. Another factor may be of interest. In Hiroshima the last patient who died from severe leukopenia died on September 24. The bomb exploded on August 6. The early mortality, therefore, was of high degree and the total mortality became very large by September 24. As far as we could determine from very brief Japanese records of patients studied by Japanese doctors, there was a large number of patients who died in the bombed area soon after the explosion who showed no changes of the blood but died with fever, diarrhea and shock as the chief symptoms. It is our opinion at present that these persons died an acute death produced by an overwhelming dose of gamma radiation. I believe at the moment that Dr. LeRoy and Dr. Liebow have not completed their studies on this particular group of patients, on whom we have records of a small number of autopsies. As time went on, many who undoubtedly had developed leukopenic states earlier survived because they were fortunate not to develop the type of infection frequently seen in terminal stages of leukopenic states. Thus they may have survived the early phase of leukopenia and then later we saw a decreasing total mortality. But some of them ultimately died of an irreversible change in the bone marrow which led to an aplastic anemia. When the studies are completed (this is only a guess on my part) the time in which the leukopenic state developed in many of these patients will, I believe, practically correspond to the known life span of the white blood cell. Those who died of aplastic anemia later lived a period of time which will about correspond to the known life of the red blood cell. That, I think, is one of the important phases that will be brought out when these reports are completed.

POLIOMYELITIS

Neuropathologic Observations in Relation to Motor Symptoms

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There are few diseases which illustrate as well as poliomyelitis the importance of a quantitative point of view in evaluation of the variegated clinical patterns. In this infection the subclinical case grades into the clinical case and the nonparalytic into the paralytic with no sharp qualitative separations and with correspondingly wide variations of intensity of pathologic change in nervous tissues. Death itself may come as the result of an unusually intense involvement of localized vital brainstem centers, which are to some extent involved even in mild cases, or may follow widespread damage to many important centers without overwhelming any one of them. In such cases it is obviously impossible to say which straw it was which broke the camel's back. In the course of study of the pathologic material from 24 human cases, 13 of them previously described in detail,[1] it became increasingly clear that the use of pathologic material from such fatal cases in the correlation of symptomatologic data with lesions is extremely dangerous. One reason for this is the simple fact that death in poliomyelitis seldom occurs except as the result of such widespread and severe damage that important details are masked. Another reason is the uncertainty of judging whether lesions are sufficiently severe to significantly alter normal function. Neverthe-

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The author is greatly indebted to several persons for their assistance in obtaining the human pathologic material. Cases 1 to 21 have been previously described,[1] and their sources have been acknowledged. Cases 29 to 40 occurred in Baltimore during the outbreak of 1944. Clinical data was made available by the generous cooperation of Dr. Margaret H. D. Smith and the members of the staff of the Sydenham Hospital; pathologic material was obtained with the kind assistance of Dr. Arnold Rich and the members of the staff of the Pathology Department of the Johns Hopkins Hospital.

[1] Howe, H. A., and Bodian, D.: Neuropathological Evidence on the Portal of Entry Problem in Human Poliomyelitis, Bull. Johns Hopkins Hosp. 69: 183, 1941.

less, numerous clinical observers since the time of Strümpell[2] and Medin[3] have attempted to correlate the symptomatologic manifestations of human poliomyelitis with cerebral as well as with spinal lesions. Some, like Wickman,[4] who gave to the problem a wealth of accurate observation and keen insight, made important contributions which are still not fully appreciated by modern workers in this field. My own interest was aroused from the direction of neuropathology, since anybody with a knowledge of the rudiments of neurology who examines cerebral sections from poliomyelitis patients is almost certain to wonder what are the clinical concomitants of the extensive lesions in the brain. Of course, when the patient has had a right-sided facial paralysis one will find severe neuron destruction and inflammatory changes in the right facial nucleus, but when one looks beyond the primary motor centers the clinical-pathologic correlations are much more obscure and complex. Added to the theoretic difficulties are the practical ones. In many fatal cases the patient enters the hospital in severe respiratory distress and cannot be adequately examined. This results, for example, in the extremely obvious discrepancy between recorded clinical involvement of cranial nerve musculature and the pathologic observations in corresponding cranial nerve nuclei in many patients (table 1). Moreover, many are, or become, so severely paralyzed that other symptoms are masked. Despite this difficulty it was decided that it might be instructive to study human material in the light of experience obtained with experimental material in order to compare the human disease with controlled experimental cases, and to determine how far it is possible to use human material for specific problems of pathogenesis and symptom analysis.

Three features of the pathologic picture of poliomyelitis must be clearly understood before one can make a satisfactory correlation of clinical symptoms with pathologic substrate. The first is the fact that all the evidence available shows conclusively that every case of poliomyelitis, human or experimental, exhibits lesions of the brain.[1] In the experimental animal this includes nonparalytic and abortive cases as well as paralytic cases. As far as the pathologist is concerned, all cases of poliomyelitis are encephalitic. The second fact is that in human poliomyelitis, as well as in most experimental cases, some parts of the brain seldom if ever are affected. These include primarily the entire cerebral cortex, except for the motor area, the corpus striatum except for the globus pallidus and the cerebellar cortex except for the vermis. In other words, the brain stem, as far forward as the hypothalamus and thalamus, bears the brunt of the cerebral pathologic changes in poliomyelitis. The third important generality is that great variation occurs in the severity of pathologic involvement of most central nervous system centers, but the same centers are generally involved in greater or lesser degree in almost all cases. I should like to emphasize this last point by stating that 2 fatal cases in which the patients did not primarily die of poliomyelitic infection did not differ in any fundamental regard from other fatal cases with respect to distribution of lesions in the brain (cases 9 and 40).

THE ROLE OF BRAIN STEM CENTERS

Of those centers in the nervous system concerned with muscular function, the following commonly are involved to a greater or lesser degree in human and in experimental poliomyelitis: the motor cortex, the globus pallidus, the substantia nigra, the subthalamus, the red nucleus, the tegmentum of the midbrain, the cerebellum, the vestibular nuclei, the reticular formation of the pons and medulla oblongata, the motoneurons of the brain stem and spinal cord, the internuncial neurons in the intermediate and posterior columns of the spinal cord and the proprioceptive cells in sensory ganglions (table 1).

If all the motoneurons of the spinal cord were destroyed in every case of poliomyelitis, the problem would be simple. All the symptoms that might result from damage to these centers would be masked by the flaccid paralysis resulting from damage to one of them, the anterior column of the cord, which contains the lower motor neurons. It happens, however, that complete flaccid paralysis is infrequent as compared with the partial paralyses that result from irregular destruction of motoneurons in the cord. The problem, then, is to attempt to evaluate disturbances of function due to lesions of the upper motor neurons in a mixture of normal muscles and muscles weakened by lesions of the lower motor neurons. One can take as a point of departure in this problem two important facts which are clear from previously published work.

The first is that clumsiness, hyper-reflexia, spasticity and tremor of muscles have been demonstrated in the preparalytic stage of experimental poliomyelitis before virus or lesions could be demonstrated in the region of the spinal cord which corresponded to the affected muscles. Severe lesions, however, were always present at this time in centers of the brain stem in these cases.[5] A primary separation of the role of cerebral and of spinal cord centers in the production of motor symptoms can therefore be made from an analysis of experimental animals killed in the preparalytic period. It is interesting that Wickman mentioned the possibly analogous occurrence of increased patellar reflex in an otherwise normal leg in some cases involving paralysis of the arm.

The second fact is that experimental animals may have lesions in all the previously enumerated cerebral centers without manifesting any clinical evidence of muscular dysfunction. In fact, it has been shown that some animals with nonparalytic poliomyelitis do not have any lesions in the spinal cord but have a characteristic distribution of lesions in the brain.[6]

It is this last point which suggests an important further simplification of the problem. Apparently, severe destructive lesions are usually necessary to produce dysfunction at the clinical level, and one must therefore look for centers which are severely involved to locate the site of origin of clinical signs. The large margin of safety of some cerebral centers is a well known feature of central nervous system function.

With this point in mind, one can see that in experimental animals as well as in human beings, only a few centers in the brain are severely involved often enough to suggest that they regularly play an important role in the motor symptoms of poliomyelitis. These centers in the series of 24 human cases, along with those less severely involved, are arranged in table 2 in a frequency series to show more graphically their relative importance as sites of pathologic change.

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[2] Strümpell, A Ueber die acute Encephalitis der Kinder, Allg Wien. med Ztg **29:** 612, 1884, Deutsche med. Wchnschr. **10:** 714, 1884, Jahrb f Kinderh. **22:** 173, 1885

[3] Medin, O. Ueber eine Epidemie von spinaler Kinderlähmung Verhandl d internat med Cong (1890) (no 6) **2:** 37, 1891

[4] Wickman, I · Beitrage zur Kenntnis der Heine Medinschen Krankheit, Berlin, S. Karger, 1907

[5] Bodian, D Experimental Evidence on the Cerebral Origin of Muscle Spasticity in Acute Poliomyelitis, Proc. Soc Exper. Biol. & Med. **61:** 170, 1946

[6] Bodian, D, and Howe, H. A · The Pathology of Early Arrested and Non Paralytic Poliomyelitis, Bull Johns Hopkins Hosp. **69:** 135, 1941, Experimental Non Paralytic Poliomyelitis · Frequency and Range of Pathological Involvement ibid **76:** 1, 1945; Non Paralytic Poliomyelitis in the Chimpanzee, J Exper. Med **81:** 255, 1945.

It is obvious that in the brain the centers most frequently damaged severely are the vestibular nuclei, the roof nuclei of the cerebellum and the reticular formation. It is extremely interesting that these three centers are interconnected by vestibulocerebellar and fastigiobulbar tracts, and two of them, the vestibular nuclei and reticular formation, are connected with the spinal cord. It is possible that they should be grouped together as a functional entity and that they therefore may play a joint role in modifying voluntary motor function and in regulating postural tone.[7] Magoun, in fact, has demonstrated experimentally the role of the reticular formation in modifying spinal motor activity.[8] Severe lesions in one or all of these centers may therefore superimpose on muscles weakened by imperfect spinal innervation varying degrees of altered suprasegmental control, which clinically might appear as varying degrees of hypertonia or hypotonia, ataxia, tremor and weakness.

Fatal human cases manifest the destructive changes in these centers in maximal form. Experience with the larger range of material made possible by the use of experimental animals shows that in nonfatal cases one would not always expect the maximal effect. As a matter of fact, in some of the human cases in which there were no bulbar signs, and in which death was due to paralysis of respiratory muscles or to complications unrelated to the poliomyelitis infection, there was found a degree of involvement of brain centers comparable with that in mild paralytic or nonparalytic experimental cases. In 1 of these cases a boy aged 13 was recovering nicely from poliomyelitis when he succumbed to an attack of appendicitis fifteen days after the onset of his poliomyelitic infection. He had had muscular pain, a stiff neck and a stiff back early in the course of his disease, along with weakness of the arms. Unfortunately, he had not had a thorough neurologic examination before he died (case 9). In instances of this kind the only centers consistently showing severe damage have been the vestibular nuclei, especially Deiters' nucleus, and the reticular formation.

Table 2 is intended to show both the variation of intensity of pathologic damage in various centers and the frequency of occurrence of severe, moderate or mild degrees of damage in the series. Obviously, these grades of severity are subject to varying interpretation. The grade "severe" in any particular center indicates the greatest degree of damage in that center in my experience. In regard to the vestibular nuclei, cerebellar roof nuclei and the lower reticular formation, this term generally means destruction of at least 70 per cent of neurons. As a rule then, the severest damage occurs in the vestibular nuclei and in the reticular formation.

TABLE 1.—*Twenty-Four Fatal Cases*

Clinical Data in Relation to Pathologic Damage

Case	1	7	8	9	10	11	12	13	14	17
Sex	M	M	M	M	M	F	M	M	M	M
Age	*9*	*26*	*6*	*13*	*27*	8	*26*	*7*	*7*	*23*
Illness duration, days	8	7	5	15	6	10	9	24	5	3
Muscular pain	+	−	+	+	+	+	+	..	+	+
Stiff neck	+	..	+	+	..	+	..	+	+	+
Stiff back		..	..	+	..	..	..	..	..	..
First paralysis	Arms	Pharynx, larynx	*Arms*	*Arms*	*Respiration*	Pharynx	*Arms*	*Legs*	Arms	*Legs*
Other paralyses	Respiration	*Palate*	Respiration, pharynx	—	Legs, pharynx	Face	*Respiration*	Arms, respiration	Face, respiration	Respiration, abdomen
Pathologic damage										
Motor cortex	++	++	+++	++	++	−	++	++	++	+++
Pallidum	++	++	++	+	−	++	++	+	+	−
Substantia nigra	+++	+++	+++	+	++	+++	+++	+	++	+++
Subthalamus and midbrain	+++	++	+++	+	++	+++	+++	++	+++	+++
Vermis cerebelli	+++	+	+++	+	++	−	++	+	++	++
Cerebellar roof nuclei	+++	+++	+++	+	+++	+++	+++	++	++	+++
Vestibular nuclei	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++
Reticular formation	+++	+++	+++	+++	+++	+++	+++	++	+++	+++
Motor nuclei, 3d nerve	−	+	++	−	++	++	+	+	+++	++
Motor nuclei, 5th nerve	+	++	+	+	++	+++	++	+	++	++
Motor nuclei, 7th nerve	++	+++	++	++	++	+++	++	+	+	++
Motor nuclei, 10th nerve	+	++	+	−	+++	+++	++	+	+	++
Motor nuclei, 12th nerve	+	++	++	+	++	++	+++	+	++	+++
Cervical spinal cord	.	+++	+++	++	..	..	+++	++	+++	+++
Thoracic spinal cord	..		..	..	..	..	..	..	+++	.
Lumbar spinal cord	..	+++	..	..	..	..	.	..	+++	..
Spinal ganglions	.			..	..	..	..	..	..	..

Plus signs indicate mild (+), moderate (++) and severe (+++) degrees of *intensity* of *pathologic damage*

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7. Allen, W. F.: Formatio Reticular[illegible] Tracts, Their Visceral Functions and Possible [illegible] and Clonic Contractions, J. Washington Acad [illegible]

8. Magoun, H. W.: Bulbar Inhibitio[illegible] Motor Activity, *Science* **100**: 549, 1944.

THE ROLE OF THE CEREBRAL CORTEX

Cortical lesions are seldom severe and are largely confined to the motor cortex (areas four and six of Brodmann). It is doubtful that they are sufficiently intense to produce clinical signs, except perhaps in rare instances. However, it is not unlikely that damage to centers such as the motor cortex, globus pallidus, substantia nigra, certain midbrain centers and even spinal ganglions, although usually not sufficient alone to produce obvious motor dysfunction, as in nonparalytic cases, may be important if added to severe changes in the centers which have been shown to be primarily involved.

It may also be concluded from the relatively slight involvement of the cerebral cortex in poliomyelitis that residual psychic effects as well as spastic phenomena cannot be the result of specific lesions in the cerebral cortex. Moreover, other so-called encephalitic symptoms, including stupor, disorientation and coma, which occurred in some of these patients, were not associated with heavier than usual reaction in the cerebral cortex but rather with a greater intensity of reaction in the brain stem, which sometimes led to the production of small focal softenings (cases 12, 29, 30, 31, 37 and 38). It is the fortunate sparing of most of the cerebral cortex which should remind physicians that the patient may be intellectually and emotionally involved in the frightening experience of loss of motor power. It is problematic whether the severe lesions sometimes found in the hypothalamus may contribute in some instances to emotional difficulties.

THE ROLE OF SPINAL CENTERS

In the spinal cord, as was to be expected, the severest lesions were always in the anterior columns. With severe involvement of the cord posterior and intermediate horns may also be heavily damaged, but such damage is more spotty in distribution than in the anterior horns, and the posterior and intermediate columns are never wiped out over whole segments as are the anterior columns at times. It is also to be expected, then, that when internuncial neurons are severely affected the neighboring anterior columns of the cord are so extremely damaged that flaccid paralysis is likely to be the only symptom referable to this region of the cord. The possibility remains, however, that internuncial neuron damage in the cord may contribute to the motor dysfunction of muscles not completely paralyzed. The intermediolateral, or sympathetic, cell columns are surprisingly little involved, but in 1 of the cases there was considerable destruction of cells in these columns. Similarly, Clarke's column was usually spared and was never extensively involved.

I have seen no evidence in this material, experimental or human, that edema may play a conspicuous role in the production of paralysis. Whenever a severe inflammatory response occurs in a cord segment, the cord in such an area may show swelling of the freshly cut surface. In my experience, however, an inflammatory response severe enough to produce massive exudate in the anterior gray columns usually occurs when most of the anterior horn cells are already destroyed by virus action. In such cases there can be no question

of Human Poliomyelitis, 1939 to 1944

In Motor Centers of the Central Nervous System

18	20	21	29	30	31	32	33	34	36	37	38	39	40
M	F	M	M	M	M	M	M	F	M	F	M	M	F
31	32	11	15	10	15	3	7	37	14	2	9	7	24
2	5	6	9	5	8	5	7	12	3	3	6	2	17
+	+	+	+	..	..	..	+	..	..	..	..	+	+
..	+	..	+	..	+	+	+	+	+	+	+	..	+
..	..	+	+	..	..	..	..	..	..	+	+	..	..
Respiration	Legs	Arms	Palate	Pharynx	Pharynx	Neck, palate	Palate, pharynx	Pharynx, palate	Palate, pharynx	Face	Pharynx	Palate, pharynx	Pharynx
..	Respiration	Respiration	Pharynx	..	Palate, tongue	Arms, legs, abdomen	Respiration	Respiration, arms, legs	..	Arms	..	Face	Respiration, arms, legs
++	+++	++	+	++	+++	++	—	++	—	—	++	++	++
—	+	++	+	+	—	++	—	—	—	—	—	+	+
++	+++	++	++	..	..	..	..	+++	..	+	..	..	..
+++	+++	++	+	++	++	++	++	++	+	+	+	..	+
++	++	++	—	++	—	+++	+	+	—	—	—	..	+
+++	+++	+++	+++	+++	++	++	++	+++	+++	++	++	+++	++
+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++
+++	+++	+++	++	+++	+++	+++	+++	+++	+++	++	+++	+++	++
++	+	+	—	..	..	..	..	..	..	..	..	..	..
++	++	++	++	+++	++	+++	+++	+++	++	++	+++	+++	+
++	++	—	++	+++	+++	+++	++	+++	+++	+++	+++	++	+
+++	+	+	+++	+++	+++	+	+	++	++	—	+++	+	+
++	++	+	—	++	+++	++	++	++	+++	+	+++	+++	+
+++	+++	++	..	+++	..	+++	..	+++	+++	+	+++	+++	+++
..	..	..	..	..	..	+++	+++	..	++	++	+	++	+++
..	..	..	..	..	+++	+++	++	+++	+	+++	+	+	+++
..	..	..	..	..	..	..	.	++	++	+	+	+	++

Minus signs indicate absence of lesions in semiserial sections representing a large sample of the nerve center involved.

of possible recovery from paralysis, since all or most of the motoneurons are destroyed. Severe paralysis may occur, however, without evidence of edema and in some instances without vascular changes or severe leukocytic infiltration in the cord. Such cases are conclusive in demonstrating that the paralysis of poliomyelitis primarily depends on a direct action of the virus on the motoneurons rather than on primary circulatory or inflammatory phenomena, as has recently been reaffirmed by Nelson.[9] Experimental evidence, which was apparently ignored by this author,[9] has been abundantly available to demonstrate the selective action of the virus on nerve cells.[10]

Table 2.—*Twenty-Four Fatal Cases of Human Poliomyelitis*

Intensity of Pathologic Damage in Motor Centers of the Central Nervous System

	Severe	Moderate	Mild	Absent
Motor cortex	4	15	1	4
Pallidum	0	7	8	9
Substantia nigra	8	5	2	0
Subthalamus and midbrain	8	10	5	0
Cerebellar roof nuclei	15	8	1	0
Vestibular nuclei	24	0	0	0
Reticular formation	20	4	0	0
Nuclei of 3d nerve	1	5	5	3
Nuclei of 5th nerve	7	11	5	0
Nuclei of 7th nerve	9	11	3	0
Nuclei of 10th nerve	7	5	9	2
Nuclei of 12th nerve	6	12	5	1
Cervical cord	1'	3	1	0
Thoracic cord	5	2	1	0
Lumbar cord	6	3	2	0

In experimental as in human cases anterior horn cells may be destroyed either in large groups or in scattered fashion. Destruction does not occur suddenly, as in sectioning of the nerves, but follows a mortality curve in the motoneuron population over a period of several days or longer. Atrophy in experimental animals is proportional to the number of motoneurons destroyed; in human beings, atrophy of disuse may be superimposed on denervation atrophy to a greater extent than in the always active monkeys. Paralysis is also largely proportional to motoneuron destruction, if one means by paralysis loss of power in a maximally stimulated muscle which has not been allowed to atrophy due to disuse. Paralysis of voluntary movement is another matter, and one which certainly may involve more than lower motoneuron dysfunction, as has already been indicated. It obviously may occur *without motoneuron destruction*: for example, in cases of cerebral injury, in extreme fatigue and in hysterical conditions. It is not always recognized that ordinary testing of the muscles, using Lovett's or similar grading methods, although useful, measures not the potential power of surviving motor units but rather the complex act of performance. Further, such grading is useless for quantitative analysis of the symptoms due to motoneuron lesions because it is not a true scale but an arbitrary scheme, which gives only the sequence of increasing quantities. But these quantities are unknown because no unit of quantity is defined. In monkeys it has been found that the best way to determine residual muscle power of surviving motor units after the acute stage of the disease is to stimulate motor nerves or motor points of the muscles involved. It would seem desirable that this be done in selected human subjects to compare potential muscular power with voluntary performance.

FACTORS IN THE RECOVERY OF MOTOR FUNCTION

Although any discussion of recovery factors must necessarily be speculative in part at this time, even a speculative analysis from the point of view of histopathologic study may be helpful in identifying the parts of the neuromotor apparatus which must be considered. Table 3 summarizes the role of these parts and the period of time during which recovery in each is probably most prominent. As already stated, the cerebral cortex is so little affected by the disease process that there is every reason to suppose that the patient can rapidly begin to relearn patterns of motor activity which formerly were smoothly and subconsciously regulated by now severely damaged brain stem mechanisms. It is generally agreed that motor reeducation is of the greatest importance in assisting recovery, and in this respect the cerebral cortex must play the dominant role.

Most of the brain stem centers concerned with motor function are damaged in varying degree in poliomyelitis, yet an evaluation of recovery from this damage must be phrased in exceedingly general terms until the precise contribution of each center in motor functions is better understood. It is difficult to believe that the damage to the brain stem does not affect motor performance even in some cases of mild paralysis, since such instances in experimental animals (6) and in the 2 cases of human poliomyelitis in which the patients died of other causes after fifteen and seventeen days (cases 9 and 40) showed considerable neuron destruction and infiltrative lesions in some brain stem centers, especially the vestibular nuclei and reticular formation. Recovery from such lesions should result from at least two processes: first, the recovery of neurons not damaged sufficiently to be destroyed and second, the rerouting of neuron-chain discharge pathways from interrupted primary paths to secondary alternative paths. The first process is probably completed in about one

Table 3.—*Factors in the Recovery of Motor Function in Poliomyelitis*

Part of Neuromotor System	Recovery Process	Period of Disease
Cerebral cortex	Relearning of complex neuromotor patterns	Entire convalescent period
Brain stem	1. Recovery of damaged neurons	First 4 to 6 wks.
	2. Rerouting of neuron discharge pathways	First 6 mos. or longer (?)
Spinal cord	1. Recovery of injured motoneurons	First 4 to 6 wks.
	2. Recovery of internuncial pathways	First 6 mos. or longer (?)
Peripheral nerve	Compensatory branching of surviving motor axons (?)[11]	Subacute and early convalescent period (?)
Muscle	Compensatory hypertrophy	Probably subacute and early convalescent periods

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[9] Nelson, N.: Spinal Cord Circulation in Poliomyelitis, Science **104:** 49, 1946.

[10] Hurst, E. W.: The Histology of Experimental Poliomyelitis, J. Path. & Bact. **32:** 457, 1929. Fairbrother, R. W., and Hurst, E. W.: The Pathogenesis of and Propagation of Virus in Experimental Poliomyelitis, ibid. **33:** 17, 1930. Pette, H.: Ueber experimentelle Poliomyelitis, Deutsche Ztschr. f. Nervenh. **116:** 163, 1930. Pette, H.; Demme, H., and Környey, St.: Studien über experimentelle Poliomyelitis, ibid. **128:** 125, 1932. Bodian, D., and Howe, H A.: An Experimental Study of the Role of Neurons in the Dissemination of Poliomyelitis Virus in the Nervous System, Brain **63:** 135, 1940; Neurotropism and the Genesis of Cerebral Lesions in Poliomyelitis: An Experimental Study, Bull. Johns Hopkins Hosp. **68:** 58, 1941. Howe, H. A, and Bodian, D.: Refractoriness of Nerve Cells to Poliomyelitis Virus After Interruption of Their Axones, ibid. **69:** 92, 1941.

month, as is the case in the spinal cord; the second process probably is of longer duration, since it is a part of the relearning process.

In further assessing the pathologic factors which underlie the paralysis in poliomyelitis, it is important to note that positive evidence is now available for the well known supposition that reversible changes may occur in spinal motoneurons in the acute stage of the disease. In experimental and in human material intranuclear inclusions may be found in anterior horn cells of otherwise normal appearance in the subacute and convalescent periods. Since such inclusions are an accompaniment of severe cytoplasmic chromatolysis in the acute stage, it follows that these cells are recovering. This means that one component of muscular weakness in the acute stage may be a partial and temporary loss of function of some motor units, as contrasted with the commoner occurrence of irreversible loss of function of a varying number of denervated muscle fibers due to motoneuron destruction. The reversible changes in motoneuron cell bodies in experimental material are negligible after the first month or so (data to be published in detail separately). After this time recovery of function in muscles must largely depend on other factors (table 3). In the human material of this present study the entire spinal cord was available in 1 patient who survived longer than two weeks (case 40). In this case, in which destruction of anterior horn cells was extensive throughout all levels, over 90 per cent of the surviving motoneurons were normal in appearance and most of the others were only moderately chromatolytic.

Since lesions, sometimes severe, are found in the posterior and intermediate horns of the spinal cord as well as in the spinal ganglions, it is possible that spinal internuncial discharge pathways and reflex pathways may be injured sufficiently to contribute to motor dysfunction. Recovery of such mechanisms probably follows a course similar to that in the centers of the brain stem, since the two are intimately connected by ascending and descending pathways.

Experimental evidence, which has been recently presented,[11] that intramuscular branching of intact nerve fibers in partially denervated rabbit and rat muscles may supply some of the denervated muscle fibers has introduced a new possibility among the factors concerned in the recovery from poliomyelitis. However, whether this type of recovery actually occurs in poliomyelitis remains to be determined. Since chromatolysis of anterior horn cells, an excellent indicator of axon interruption, is not seen in significant amount after about one month following the onset of poliomyelitis, it seems likely that any regenerative phenomena involving the growth of axons or axon branches must occur far distal to the cell body, at least in the intramuscular portion of the nerve.

As far as the recovery of function due to intrinsic changes in muscle is concerned, compensatory hypertrophy probably plays a significant role. As in the case of the other recovery factors mentioned, however, its relative importance is difficult to assess because of the variety of factors involved in the recovery process.

In conclusion, it should be apparent that many of the symptoms of poliomyelitic muscular dysfunction mentioned in this paper were not recorded in the histories of the fatal cases studied histopathologically (table 1). The reasons for this have been discussed in the opening paragraphs, and the dangers of correlating symptoms in nonfatal cases with lesions in fatal cases should be manifest. Symptoms which were recorded in most of the cases, however, were muscular pain, stiff neck and stiff back. This material can offer no more than a confirmation of earlier observations of lesions of varying degrees of severity in meninges, spinal ganglions and posterior columns of the spinal cord to account conceivably for these symptoms. In view of the rather slight involvement of these areas in many cases, such an interpretation seems too facile. The common symptoms of stiffness of the neck and back are usually interpreted as being due to meningeal irritation. It is possible to speculate that the stiffness of neck and back may also be the result of the same disturbances of the brain stem which give rise to other phenomena of spasticity in poliomyelitis. This is suggested by the frequently occurring pattern of hypertonia in postural muscles in human poliomyelitis. The origin of this pattern should be explored experimentally. The origin of muscular pain in poliomyelitis and its possible relationship to spasticity of the muscles also requires further exploration.

It should be manifest that this account has been somewhat simplified in the interest of brevity and provocation. A more detailed analysis of available autopsy material has seemed to be unprofitable until such time as more complete pathologic studies in this disease and more complete studies of normal neuromotor mechanisms are available. To one who has examined material from many dozens of monkeys and chimpanzees in all stages and degrees of severity of clinical poliomyelitis, the paramount importance of variability of intensity of pathologic change is so apparent that almost any attempt at a statement of general principles seems an oversimplification of the problem at present. In addition to the variation of intensity of pathologic change which occurs in different persons one can definitely add the variation due to different strains of virus. One group of monkeys inoculated with a given dose of strain A will show mild degrees of paralysis and no signs of spasticity. Another group inoculated with the same dose of strain B will exhibit severe spasticity in the majority of cases and subsequent severe paralysis. Variations of this sort must be expected in different epidemics.

SUMMARY

1. An extensive histopathologic survey of 24 fatal human cases of poliomyelitis confirms older accounts in showing that all victims of poliomyelitis have lesions in the brain and that the severest lesions occur in the brain stem rather than in the cerebral cortex. Moreover, great variation occurs in the severity of pathologic involvement of most centers of the central nervous system, but the same centers are generally involved in greater or lesser degree in almost all cases.

2. Motor centers involved to a greater or less degree in human and in experimental poliomyelitis are: motor cortex, globus pallidus, substantia nigra, subthalamus, midbrain tegmentum, cerebellum, vestibular nuclei, reticular formation of pons and medulla oblongata, motoneurons of cranial and spinal nerves, internuncial neurons in intermediate and posterior columns of cord and proprioceptive cells in sensory ganglions.

3. Lesions in most of these centers are characterized by wide variations of intensity both in human and in experimental poliomyelitis. Lesions of moderate inten-

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[11] van Harreveld, A.: Reinnervation of Denervated Muscle Fibers by Adjacent Functioning Motor Units, Am. J. Physiol. **144**: 477, 1945. Weiss, P., and Edds, M. V., Jr.: Spontaneous Recovery of Muscle Following Partial Denervation, ibid. **145**: 587, 1946.

sity occur in most of these centers in symptomless or nonparalytic experimental infections.

4. Severe destructive lesions occur in the vestibular nuclei, the reticular formation and the roof nuclei of the cerebellum in most fatal human cases and in many paralytic experimental infections. These are the only brain centers which regularly contain extremely severe lesions. Since it has been shown[5] that spasticity, tremor and hyper-reflexia of leg muscles can occur in the preparalytic stage of experimental poliomyelitis in the absence of virus or lesions in the lumbar spinal cord, it is suggested that lesions in these centers of the brain stem may be primarily responsible for these symptoms.

5. The possibility is not excluded that the less regularly severe lesions in centers like the motor cortex, globus pallidus, substantia nigra, certain midbrain centers, internuncial neurons in the spinal cord and even spinal ganglions may contribute to motor dysfunction other than lower motor neuron weakness.

6. Histopathologic observations indicate that most nerve cells either are destroyed during the acute stage of a poliomyelitis infection or largely recover their normal appearance in about one month or less. Such recovery of reversibly injured lower motor neurons may be a primary factor in the early restoration of muscle function.

EXTRANEURAL GROWTH OF POLIOMYELITIS VIRUS

Its Significance Relative to Possible Methods of Prevention

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Attempts to demonstrate the growth of poliomyelitis virus in cells other than neurons have repeatedly failed[1] (1936). As a result the opinion has been prevalent that in the human body growth of the virus is limited to nerve cells. That this conclusion is premature and may well be wrong is indicated by a number of well established facts relative to (1) the amount of poliomyelitis virus in human feces; (2) the prolonged period of excretion of virus in feces; (3) the usually short period of growth of virus in the central nervous system of experimental animals, and (4) the frequent intestinal infection without apparent neurologic infection seen in work with Theiler's virus in mice.

The information available in regard to the amounts of poliomyelitis virus in feces casts considerable doubt on the idea that this virus grows only in nerve tissue. In tests with pooled fecal specimens from 25 patients, we have found sufficient virus in 5 mg. of feces to infect monkeys.[2] Others have reported infection of monkeys with as little as 0.01 mg.[3] (1945) of feces. The amounts of virus developed in the central nervous system vary greatly from strain to strain. No data are available that permit direct comparison of titers of the same strain of virus in the feces and in the central nervous system. However, it has been our experience that the smallest amount of infected spinal cord that will cause infection on passage is frequently about 1 mg. or 0.1 mg. When one realizes that the amount of feces excreted by a young adult is in the neighborhood of 150 to 200 Gm. a day and that the spinal cord weighs only 34 to 38 Gm.[4] (1920), it becomes apparent that the total amount of virus excreted in feces may approximate the amounts present in the spinal cord.

It has been a general experience with poliomyelitis, as with other virus infections of the central nervous system, that maximal amounts of virus are present in the central nervous system at the time of severest clinical symptoms, or just before that stage is reached. As the acute form of illness subsides in monkeys with experimental infections the amount of virus present, or the ease with which transmission is accomplished, declines rapidly.[5] One week after an animal has become afebrile the chances of obtaining virus from a specimen of spinal cord are greatly reduced.

This general observation is in striking contrast to the repeated finding of virus in feces for weeks after an acute attack of poliomyelitis. According to the data in the study of Horstmann, Ward and Melnick[6] (1944) 27 per cent of persons excreted virus during the fifth and sixth weeks after the onset of symptoms of poliomyelitis. It seems difficult to account for the continued excretion of virus in feces on the basis of contamination from the nervous system.

If the prolonged excretion of virus in feces is to be explained as coming from the nervous system, one would expect to find evidence of extensive and progressive damage to the nerve cells supplying the intestinal tract. It has been shown that the presence of virus in large amount in any part of the central nervous system is regularly associated with extensive damage to the neurones in that area[7] (1930). One does not find clinical evidence of progressively severe dysfunction of the intestinal tract in persons convalescent from poliomyelitis and excreting the virus. This lack of significant neurologic damage to the intestinal tract must be considered as evidence against the idea that poliomyelitis virus in the feces is derived from the nerve cells supplying the intestine.

Additional evidence in favor of the idea that the virus of poliomyelitis may grow in cells other than those of the nervous system is provided by studies of Theiler's virus of encephalomyelitis of mice[8] (1941). It is well established that this virus may be excreted in the feces of mice over long periods of time. Symptoms of neurologic damage probably do not develop in over 1 of several thousand mice infected with the virus to the extent that they excrete it in their feces. This is true in spite of the fact that the virus when introduced into the central nervous system causes a severe and frequently fatal disease resembling poliomyelitis of man.

Aided by a grant from the National Foundation for Infantile Paralysis.

From the Department of Microbiology, University of Washington School of Medicine (Dr. Evans), and the Department of Bacteriology, University of Minnesota Medical School (Dr. Green).

[1] Sabin, A. B., and Olitsky, P. K.: Cultivation of Poliomyelitis Virus in Vitro in Human Embryonic Nervous Tissue, Proc. Soc. Exper. Biol. & Med. **34**: 357, 1936.

[2] Unpublished experiments

[3] Pearson, H. E, and Rendtorff, R. C.: Studies of the Distribution of Poliomyelitis Virus. II. In a Small Town, Am. J. Hyg **41**: 179, 1945.

[4] Kopsch, F., in Rauber, A A.. Lehrbuch der Anatomie des Menschen, Leipzig, Georg Thieme, 1920, pt 6, p 21.

[5] Since this paper was submitted for publication, Bodian and Cumberland (Am. J. Hyg **45**: 226, 1947) have presented detailed information showing the sharp decrease in amounts of poliomyelitis virus in the spinal cord following the development of paralysis

[6] Horstmann, D. M., Ward, R., and Melnick, J. L.: Persistence of Virus Excretion in the Stools of Poliomyelitis Patients, J. A. M. A. **126**: 1061 (Dec. 23) 1944.

[7] Fairbrother, R W., and Hurst, E. W.: The Pathogenesis of, and Propagation of, the Virus in Experimental Poliomyelitis, J. Path. & Bact. **33**: 17, 1930.

[8] Theiler, M Studies on Poliomyelitis Medicine **4**: 443, 1941

This virus is capable of spreading through the nervous system by way of neural pathways It seems unlikely that virus could invade the nerve cells of the intestinal tract and grow there for the long periods of time during which it can be found in feces without invading the central nervous system. Extraneural growth of this poliomyelitis-like virus is not proved but is a strong possibility.

It is recognized that none of the evidence presented proves conclusively that the poliomyelitis virus grows outside of nerve cells We have attempted, rather, to relate certain established facts that are extremely difficult to explain if it is assumed that the poliomyelitis virus grows exclusively in nerve cells The concept that poliomyelitis virus may grow in the human body outside of nerve cells is not new[9] (1942). However, the absence of definite proof of such extraneural growth of the virus has been construed by some to mean that the virus can grow only in nerve cells. In view of the data that have been reviewed this conclusion seems unjustifiable.

This question may be of more than academic importance. If extraneural growth of poliomyelitis virus is the basis for the excretion of virus in feces, such extraneural growth may be a necessary first step in infection with the virus. We visualize the possibility that small amounts of poliomyelitis virus, gaining entry into the alimentary canal, might be incapable of invading the nervous system until preliminary extraneural growth of virus has occurred.

Should this be the case, it is apparent that one possible method of preventing poliomyelitis would be to prevent the extraneural growth of the virus. It would seem reasonable, for example, to investigate the possibility of utilizing the interference phenomenon, or cell blockade, in this regard.

If the virus of poliomyelitis grows outside the nervous system, different strains of the virus should vary in their capacity to invade from the extraneural location into the central nervous system. One might find strains totally incapable of invading the central nervous system, although fully able to grow abundantly in the extraneural site A strain of this sort would be the type to use in any attempt to prevent poliomyelitis by employing the interference phenomenon

The fundamental studies of this phenomenon with plant viruses[10] (1940), with bacteriophage[11] (1942) and with mammalian infections[12] (1944) have already borne fruit in practical control of one mammalian virus disease, canine distemper[13] (1946). In view of the discouraging results that have come from the use of ordinary methods of immunologic control (vaccines and serum therapy), it would seem that serious consideration should be given to the newer and fundamentally different approach provided by the interference phenomenon The question whether extraneural growth of poliomyelitis virus is a necessary prerequisite to invasion of the nervous system then assumes critical importance

GROSS AUTOPSY OBSERVATIONS IN THE ANIMALS EXPOSED AT BIKINI

A Preliminary Report

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The unique opportunity to study the effect of massive ionizing radiations on experimental animals was provided by Operation Crossroads. The information obtained from observing the tissue response to stimuli provided by release of atomic energy is of medical, industrial and military interest. Radioactive and fissionable substances and their subsequent use presents many new hazards to health. Soon the methods for the prevention, diagnosis and treatment of ionizing radiation injuries should be familiar to all physicians

Because of the character and importance of the Bikini experiments, aid in the planning and the execution phases was obtained from scientists in civilian life, the Army, Navy and Public Health Services

It was considered that goats, pigs, white rats and guinea pigs would best meet the experimental needs These animals were chosen because of the wide range of their species' resistance to ionizing radiations Goats and pigs are approximately as sensitive to total body radiation as man, guinea pigs are more sensitive and rats are more resistant Ease of handling and feeding and the hardiness of the species were other factors influencing our choice of animals.

MATERIALS AND METHODS

In test "Able," the air explosion, 176 goats, 147 pigs, 3,130 rats (5 to a cage) and 57 guinea pigs were placed on twenty-two target ships. Twenty-nine goats, 48 pigs and 687 rats were retained on board the laboratory ship as controls The positions used for the placement of animals on the target ships covered the ship from masthead to below the water line and from bow to stern Locations on each ship offered varying amounts of shielding against ionizing radiation varying from no protection to the protection afforded by 6 or 8 inches (15 to 20 cm) of steel armor plate The object was to expose animals with just such amounts of shielding as members of the ship's crew might have.

For test "Baker," the shallow underwater explosion, 10 pigs were placed on each of two ships and 50 rats were placed on each of four ships in such a manner as to protect them from air, water and heat waves, yet afford only minimal shielding from ionizing radiation

Six boarding teams, which had placed the animals prior to the tests, reentered the target area as soon after the tests as the ships were pronounced safe for boarding The animals were returned to the laboratory ship, where they were individually examined for radioactivity and treated as indicated The living were placed in special pens and cage racks for observation. The dead were removed to the autopsy room for dissection and study.

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[9] Howe, H A, and Bodian, D Neural Mechanisms in Poliomyelitis, New York, The Commonwealth Fund, 1942, chap 5

[10] Price, W C Acquired Immunity from Plant Virus Diseases, Quart Rev Biol **15**: 338, 1940

[11] Delbruck, M, and Luria, S E Interference Between Bacterial Viruses I Interference Between Two Bacterial Viruses Acting upon the Same Host, and the Mechanism of Virus Growth, Arch Biochem **1**: 111, 1942

[12] See references in Mudd, S Pathogenic Bacteria, Rickettsias and Viruses as Shown by the Electron Microscope II Relationships to Immunity, J A M A **126**: 632 (Nov 4) 1944

[13] Green, R G and Stulberg, C S Cell Blockade in Canine Distemper, Proc Soc Exper Biol & Med **61**: 117, 1946

Read in abbreviated form before the meeting of the American Association of Pathologists and Bacteriologists, Chicago, May 16 17, 1947
From the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md (Commander Tullis) and New England Deaconess Hospital, Boston (Captain Warren)

Three hundred rats, 100 from each of three target ships, were killed in groups of 30 a day beginning four days after test "Able." Also from time to time control goats, pigs and rats were killed for study. Tissue blocks from all organs of the animals autopsied were preserved in 10 per cent neutral solution of formaldehyde and in Bouin's solution. Microscopic sections of these tissues are being prepared at the Naval Medical Research Institute.

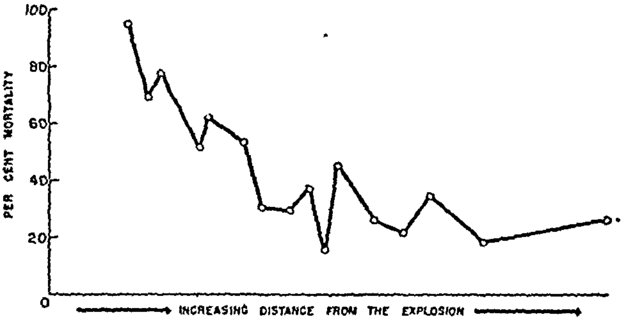

Fig. 1.—Mortality in rats—test "Able"

RESULTS

The atomic bomb contains all the explosive characteristics of trinitrotoluene magnified many times. In addition it produces ionizing radiations, which distinguish it from all other bombs.

The general mortality percentages for the animals exposed in the bomb tests (figs. 1 and 2) take into account deaths from all phases of the destructive power of the atomic bomb including air blast, thermal radiation, secondary fire and ionizing radiation. Loss by drowning is not included. It was not always possible to rule out certain factors which may have played a part in bringing about death, but in the Bikini tests ionizing radiations caused the greatest percentage of mortality. The animals placed for the shallow underwater explosion test were shielded from all effects of the blast except that of ionizing radiation. The mortality percentages in figure 2 represent deaths due to that cause only.

The animals which died from the effects of total body radiation died in the acute phase of the disease, and no deaths due to latent or chronic effects have been observed to date. Almost 100 per cent of the deaths occurred within one month after the tests. The greatest peak in the mortality occurred within two weeks. This was true in both tests and in all four species of animals.

The typical clinical picture of a goat or a pig, and to a lesser degree a rat, exposed to a lethal but not overwhelming dose of ionizing radiation showed an animal which at first looked and acted normally. The total white blood cell count decreased within a few hours, chiefly because of a fall in the number of lymphocytes, but within a few days the segmented cells also decreased. At the end of a week or ten days the red blood cell count showed a corresponding decrease. At that time or a little later the clotting and prothrombin times increased, clot retraction was altered and in some instances the bleeding time was increased.

After the first two or three days of apparent well-being of the animals there developed diarrhea, which in a week became bloody, tarry or both. They stayed on their feet but became hyperirritable and even belligerent at times. They took water but often refused food. As the anemia progressed, especially if the diarrhea persisted, weakness developed and the animals spent considerable time lying down. In the large animals, rapid panting respirations often were present from the first day or two after exposure to the bomb burst. They usually responded when approached, struggled to their feet and even walked, until suddenly they died. Death often was unexpected from clinical observations alone. When the diarrhea subsided and the respiratory distress abated the animals appeared to improve clinically, but when the tolerance dose of ionizing radiation was exceeded death was inevitable.

The gross pathologic lesions in goats and pigs which had died from the effects of overexposure to ionizing radiations were similar and were of three main types: hemorrhage, secondary infection and degenerative changes.

The earliest and most consistent lesions to appear were associated with hemorrhage, which became evident, particularly in the goats, pigs and guinea pigs, on or after the third day following exposure. The hemorrhagic lesions involved almost any or every tissue in the body. In the early stages of radiation injury dilatation and congestion of the small blood vessels of brain, heart, lungs, mesentery, bowel and subcutaneous tissue were the only observations. Later a few scattered petechiae were found in these tissues along with the hyperemia. In the animals which survived for five to ten days many petechiae expanded to ecchymoses or, occasionally, to small hematomas. The sites most frequently involved, singularly or in combination, were the heart and the gastrointestinal and genitourinary systems.

In the animals which had received large amounts of ionizing radiation, among both goats and pigs, petechial hemorrhages in the renal cortices and pelvic walls were common (fig. 3). Gross hemorrhage with blood clots in the kidney pelves was seen occasionally in the larger animals. The genitourinary lesions in guinea pigs were confined to petechiae in the renal substance, but this was rarely seen in the rats.

The diaphragm over the spleen was a favorite location for rather extensive extravasation of blood in goats and pigs. In guinea pigs widespread hemorrhage into the muscles of the back, the abdomen, the legs, the chest and the diaphragm was a fairly constant and decidedly striking manifestation of radiation. This intramuscular hemorrhage was the most characteristic lesion in the guinea pigs. It was practically never seen in the rats but occasionally was seen in the goats and pigs.

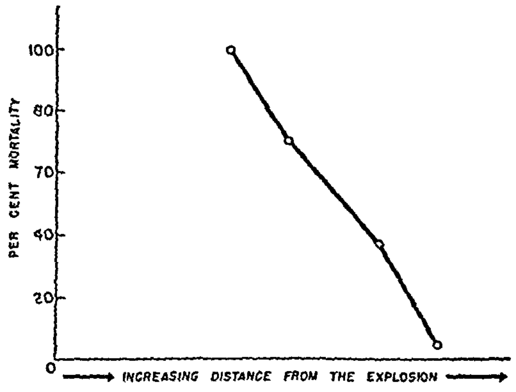

Fig. 2.—Mortality in rats—test "Baker"

In all species the lymph nodes, particularly of the cervical, preaortic, mesenteric and inguinal regions were characteristically hemorrhagic. Usually the nodes were enlarged, but their chief distinguishing feature was their dark red color, interspersed on the cut surface with patches of moist gray lymphoid tissue. They were uniform in appearance in all regions of the body. The brain and meninges sometimes contained petechiae, and the skin, particularly in the "Baker" pigs, frequently showed purpuric lesions.

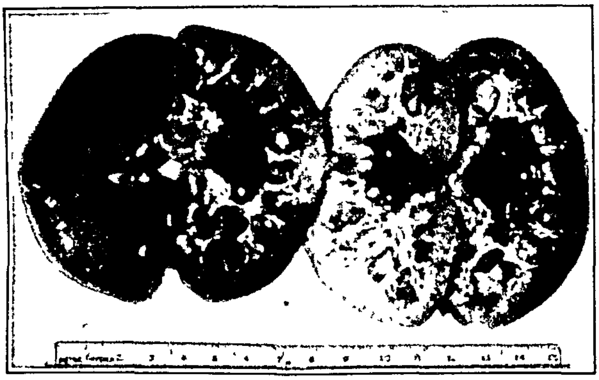

Fig. 3.—Hemorrhage into the cortex, medulla and pelvis of the kidneys of a pig exposed in test "Baker."

In about 80 per cent of the deaths, the lungs were mottled dark red and pink; the cut surface was wet and sometimes dripped blood-stained fluid, and the bronchi were filled with abundant pink or white froth. The dark red patches were irregular but usually sharply outlined and firm, resembling areas of hemorrhagic lobular pneumonia. Lobar consolidation was seldom seen.

The gastrointestinal tract presented a third type of lesion manifested chiefly in the large intestine. In the first three or four days after exposure, acute ulceration of the large intestine sometimes occurred in the absence of gross hemorrhagic lesions. The ulcers were small, irregular and often elongated in the longitudinal axis of the bowel (fig. 4). They were always superficial and never extended deeper than the submucosa. Covering the surface were tenacious, feces-stained, fibrin membranes, which were removed with difficulty, leaving a raw and moist surface beneath. Later similar ulcerations were surrounded by swollen hemorrhagic mucosa. Although the layers of the bowel external to the mucosa were usually edematous and hemorrhagic and were often spotted with petechiae, there was no evidence of perforation or peritonitis. The stomach sometimes contained similar ulcerations. Usually the small intestine showed petechial hemorrhages in the muscular layer, but the mucosa appeared normal. However, the pigs exposed in the "Baker" test sometimes showed ulcerations in the mucosa of the entire small intestine as well as in the stomach and large bowel. The ulcerations of the small intestines were accompanied by less edema and usually were not covered with a fibrinous membrane. A striking feature in all these ulcerations was the absence of gross purulent reaction.

In the tonsils shallow, fibrin-covered, irregular ulcerations similar to those seen in the colon were fairly common. The ulcerations appeared to spread from areas of petechial hemorrhage.

The liver, spleen and adrenals were essentially normal. The bone marrow sometimes was pale and sometimes hyperemic without obvious relation to the general disease state of the animal.

SUMMARY AND CONCLUSIONS

Clinical observations are readily correlated with the pathologic observations. Severe radiation sickness is associated with depression of the hematopoietic centers and increased capillary permeability. Capillary dilatation and probably damage to intercellular cement substance combine to bring about extravasation of blood which is recognized clinically as petechiae, ecchymoses and, sometimes, small hematomas. Degenerative changes may result in ulceration of the gastrointestinal tract which, when it occurs, causes diarrhea and is responsible for considerable hematic loss. Loss of blood into the tissues and externally is largely responsible for the anemia which appears in the second week. Action of the ionizing radiations on the circulating white blood cells is possible and may account in part for the early leukopenia, but the chief factor in the development of continued leukopenia or agranulocytosis is the damage to the bone marrow.

Anemia and leukopenia are responsible for the weakness, irritability and lowered resistance to infection. Degeneration of tissue leads to absorption of toxic breakdown products from the injured cells.

Death in the first month after exposure to lethal amounts of ionizing radiation is apparently the result of three factors working singly or in combination: anemia, secondary infection and/or toxemia associated with the degeneration of tissue.

In the Bikini animals nearly 100 per cent of the mortality due to ionizing radiation injury occurred within the first month, with the greatest peak at two weeks after exposure. The tests were designed to study all phases of the destructive power of the atomic bomb, but ionizing radiations accounted for the great majority of deaths.

Severe burns were few in number. The exposed animals were well protected by their fur. In those cases in which anti-flash-burn cream was applied to the depilated skin of the animals full protection was afforded.

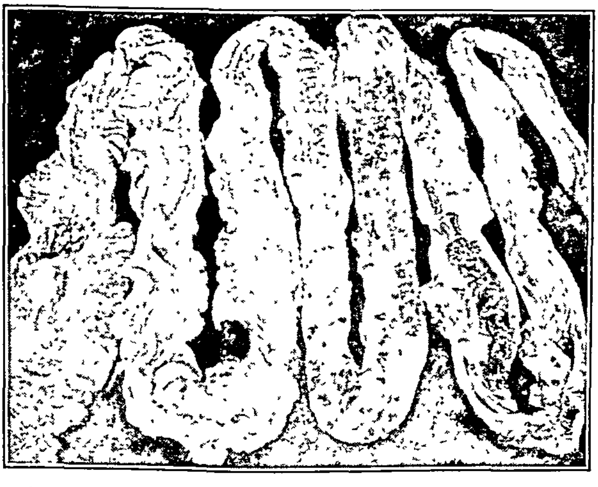

Fig. 4.—Hemorrhage and ulceration in the mucosa of the large intestine of a pig exposed in test "Baker."

Air blast injuries will be the subject of a special report, but it may be stated here that they were not common causes of death.

From the data presented several conclusions seem justified.

1. Ionizing radiations of the atomic bomb are lethal for goats, pigs, guinea pigs and rats exposed to them under varying conditions.
2. The gross pathologic observations are fairly characteristic and similar in the four species studied.
3. The sensitivity to ionizing radiations varies somewhat among the four species, the guinea pigs being by far the most sensitive, the pigs being slightly more sensitive than the goats and the rats comparatively resistant.
4. The flimsiest of shielding seems to afford ample protection from thermal radiation, but heavy armor does not always protect from the ionizing radiations.
5. An underwater atomic bomb explosion is more lethal than an air explosion, since the spray which showers down on the ships in the vicinity carries with it fission products which contaminate their surfaces, cannot be removed easily and remain dangerously radioactive for long periods of time.

TREATMENT OF INFECTIONS OF THE NECK

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A discussion of the treatment of infections of the neck should entail the following: first, the fascial planes of the neck; second, the area from which the infection arises; third, the types of organisms which are present, and fourth, the medical and surgical treatment of the infection.

The fascial planes of the neck

The fascia is a sheet or band of tissue which invests and connects muscles and other functional structures, such as neurovascular bundles, with the viscera. The fascia consists of a waxy matrix of fibrous and fatty fibroareolar tissue cells in various proportions as to cellular components, depending on the position and functional requirements.

Genetically, the fasciae are composed of the same type of connective tissue cells which are utilized in the formation of the supportive framework and the covering of muscles, blood vessels, nerves and viscera. The fasciae are structurally identical with the periosteum and muscle tendons and with the supportive framework of the serous membranes. As a matter of fact the fasciae cover and blend with the external coat of all the important organs of the body; namely, blood vessels, nerves, bones, muscles and most of the viscera.

The surgeons are familiar with the fascial interspaces as lines of cleavage. The fascial interspaces also serve as paths of least resistance for the spread of infection, neoplasms or foreign bodies. Despite their well known clinical importance the fasciae are less well comprehended than any other structures studied in gross anatomy. The textbook descriptions of the fasciae are, as a rule, based on observations in the cadaver and are, therefore, complicated and variable.

The fibroareolar tissue is relatively soft, pliable and elastic, whereas in the cadaver the fasciae are pultaceous and of suetlike consistency. It must be remembered that the technic of surgery requires exposure with minimum trauma and display of anatomic structure.

One might criticize the conception of the fascia which is ordinarily presented to the student as purely academic and based on dead anatomy.

The following are some of the difficulties encountered in understanding the fascia:

1. Discrepancies in description by different authors (American, English, French and German).
2. Variations in terminology.
3. Failure to appreciate the important part played by the fascia in the mechanical functions of the body.
4. Failure to appreciate fundamental morphologic principles.
   a. The primary tissues are primarily supportive.
   b. All connective tissues are derived from the mesenchyma, and all are modifications of the fibroblast or the fibril connective tissue cells.
5. The so-called interfascial spaces are filled or made up of filmy fatty fibroareolar tissue which infiltrates in the so-called tubular sheathes and serves the important function of support, of insulation and of separating the various functional units. The spaces are of various sizes and contain connective tissue elements of various degrees of density depending on functional requirements.

At the risk of oversimplifying the problem of the connective tissues of the body it should be emphasized that, after all, the connective tissues have only two functions; first, they tie structures together and second, they keep structures apart.

It is true that pus tends to gravitate or progress along the paths of least resistance, which is through the substances of the soft supportive intermembranous spaces.

The area from which the infection originates

The area from which the infection originates is of prime importance, and careful inquiry into the history of the portal of entrance is important for the reason that evidence of inflammatory reaction may have disappeared by the time there is evidence of the infection of the neck.

In case of infection in the neck from dental extraction the secondary sequelae of infection in the neck may occur ten days to two weeks after extraction of the tooth. On the other hand, the infection in the neck may follow the extraction immediately.

The tonsils, cervical vertebrae, nasal sinuses, temporal bones, salivary glands, esophagus and respiratory tract and injuries about the hypopharynx, larynx, trachea and esophagus are often the sources of infection in the neck. Fracture of the sinuses, especially the maxillary, or fracture of the mandible is frequently followed by cervical infection. The infection in the neck may be relayed from any of these areas.

If the source of the infection can be determined it will give a clue as to the course the infection may follow and the probable point of localization.

A peritonsillar abscess, following tonsillitis, is one of the commonest infections of the neck. This may have as a complication a subtonsillar abscess, a parapharyngeal abscess or a pharyngomaxillary abscess.

The next most commonly observed cervical infection is that of the pharyngomaxillary space following the removal of tonsils under local anesthesia. This may be opened and drained intraorally or externally by using the Mosher technic. An infection in this region may extend downward by way of the pharyngomaxillary space and involve the pretracheal fascia, thereby producing an edema of the larynx which in turn may result

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in an extremely grave situation. It may burrow its way into the carotid sheath and break through, causing an internal jugular thrombosis.

Mastoid infection may reach the neck by at least four different routes. First, a Bezold's abscess may follow the posterior belly of the digastric muscle by breaking through the digastric groove and reaching the carotid sheath, thereby causing an internal jugular thrombosis. Second, infection in the petrous pyramid of the temporal bone may break through at the inferior surface following under the periosteum, reaching the prevertebral space and laterally the pharyngomaxillary space, then into the carotid sheath and involve the internal jugular. Third, an infection may break through the zygomatic cells and involve the pharyngomaxillary fossae. Fourth, an infection may break through to the neck by way of a lateral sinus, when thrombosed, which may extend directly into the carotid sheath.

The types of organisms which are present

If a smear or culture can be obtained early from the site in which the original infection is located, there is a much better chance of providing early medical therapy. If neither of these can be obtained a knowledge of the organisms which are habitués of this area must be had, or the patient must relate just what occurred which may have been responsible for the start of the cervical infection. The most commonly found types of organisms in infections of the neck are the streptococcus, staphylococcus and, occasionally, the pneumococcus. Other types are Borrelia vincenti, Clostridium perfringens and Mycobacterium tuberculosis.

In the treatment of infections of the neck before the formation of pus, chemotherapy is turned to; that is, sulfonamide compounds, penicillin or streptomycin. The relative value of each of these drugs is shown in table 1.

The medical and surgical treatment of the infection

The local application of sulfonamide drugs in cervical wounds of the lacerative type after débridement was reported to be of great value during World War II.

When there is evidence of a beginning purulent infection of the neck and there is a primary focus of infection, this must be drained in order to give chemotherapeutic agents a better chance to relieve the cervical infection.

Table 1.—*The Relative Value of Sulfonamide Drugs, Penicillin and Streptomycin in Infections of the Neck*

	Sulfonamide Drugs	Penicillin	Streptomycin
Streptococcus	++++	+++++	0
	+++	++++	0
	++	+++	+ – ?
	0	++++	+ –
	+ ?	++	0
	+	0	++ ?

If, after draining or controlling the local site of the infection, with both medicaments and surgical drainage, the infection in the neck gives evidence of going on to localization with the formation of pus, there is but one thing to do, and that is to institute surgical drainage.

The areas in which pus is most likely to form are shown in table 2.

The early recognition and proper management of these abscesses calls for a thorough knowledge of the anatomy of the regions concerned as well as surgical judgment and skill. The seriousness of these conditions lies in their tendency to spread along fascial planes and invade the thorax with a resulting mediastinitis.

Relationships are often lost due to the swelling from infection, and tissues are matted together and distended. The surgeon under these conditions must allow for great displacement and often confusing changes in tissue appearances caused by the presence of the abscess. Thus pure anatomic relationships become disturbed.

Table 2.—*Spaces of the Neck in Which Potential Infection May Occur*

Submental	Submaxillary Space	Pharyngomaxillary Space
Teeth Submaxillary space	Teeth Suppurating lymph glands Abscess of submaxillary gland	Retropharyngeal abscess Peritonsillar abscess Post-tonsillectomy abscess Suppurating jugular lymph nodes Teeth

Prevertebral Space	Submental and Submaxillary Space
Infected lymph gland Necrosing tuberculous vertebrae	Infection from wounds Teeth causing Ludwig's angina

One type of cervical infection which especially warrants mentioning is Ludwig's angina. This is a phlegmonous induration of the cellular tissues of the neck which produces a wooden-like hardness on which no impression can be made by palpation.

Anatomically the site of this induration is in the cellular tissues in the floor of the mouth and submaxillary region, usually below the mylohyoid muscle; it frequently extends into the sublingual region and is limited laterally by the horizontal portion of the mandible and inferiorly by the hyoid bone. The treatment of this lesion is radical and is as follows: Under local anesthesia a wide surgical horizontal incision is made, and the wound is left open with free drainage.

CONCLUSIONS

In the treatment of infections of the neck the following considerations are important:

1. It is necessary to know the fascial planes of the neck.
2. The site of the original infection should be discovered.
3. A knowledge of the bacteriologic cause of the infection is essential.
4. The type of medical treatment which is to be employed should be more or less specific for the organism present.
5. The selection of the proper time to perform surgical drainage is important.

ABSTRACT OF DISCUSSION

Dr. J. M. Brown, Los Angeles: I agree with the principles laid down in this paper, especially the anatomic part. I should like to mention a few etiologic factors that have a bearing on the treatment. One is the invasion of the connective tissue in the various fascial planes that Dr. McCaskey has mentioned, such as lesions following the extraction of teeth and abscesses coming down from the petrous portion of the temporal bone. When this condition is present in the tissues of the neck, the patient is decidedly sick and needs immediate attention. The second factor is that frequently a lymph node is infected for an indefinite time and then breaks down. This is a slower process, but one must be on guard and the minute the node has broken down, immediate drainage is to be instituted, thus preventing the cellulitis. The third is that of phlebitis and thrombophlebitis, which have few local symptoms. A serious phlebitis may be present with few local manifestations. This also requires immediate attention surgically because of serious complications by emboli. When a patient is admitted to the hospital with a cervical infection, it is first determined if there is any laryngeal obstruction. If it is pronounced, a tracheotomy is performed at once and a large dose of penicillin is given. If the dyspnea is of moderate severity and it is believed that pus is present in the infected area, the pus is evacuated before the performance of a tracheotomy, and in most instances the latter is found necessary. The chief anchor in these patients is penicillin. Before penicillin could be obtained, sulfonamide drugs were used and found to be of little value. Penicillin is of distinct value in stopping the cellulitis, but it will not absorb pus. As soon as one is satisfied that pus is present, the infection should be drained; local anesthetic is preferable. A general anesthetic is given only when an intratracheal tube can be used, which is not often. I have found that early incision and drainage of the affected area, plus the administration of penicillin, is the best treatment. I should like to mention one other type of neck disturbance having all the appearances of a Ludwig's angina. Three patients were admitted to the Los Angeles County Hospital with difficulty in respiration and swelling in the neck and mouth, similar in appearance to a Ludwig's. There was no tenderness or boardlike feeling and no elevation of temperature. On physical and laboratory examinations the patients were found to have nephritis, and the cervical and oral swelling was a part of the renal disease.

Dr. Rea E. Ashley; San Francisco: General immunity and local tissue immunity play an important part in preventing the extension of these infections. Certain physiologic and anatomic barriers also tend to limit the spread of these infections to the adjacent and deeper tissues of the neck. The lymph system is highly developed in the neck, and the lymph nodes constitute a series of traps for invading bacteria. Various layers of cervical fascia act as mechanical barriers to extension of the infection. Prophylaxis is most important. Early use of the sulfonamide compounds at the original site of the infection and early administration of large doses of penicillin at the first sign of complication will frequently prevent or stop extension of the infection. Once the infection has broken through, however, and symptoms of deep suppuration develop, a critical stage exists which will tax any surgeon's ingenuity and demand his best surgical judgment. No rule of thumb can be set up as to the best time to operate. That is a matter of surgical judgment. Once the decision has been made, however, and the point of incision decided on, the surgical intervention should be radical and deep. Dr. McCaskey has given a clear and concise definition of fascial interspaces and has rationalized the method by which infections spread into the deep tissues of the neck. He has also outlined the general treatment so well that little can be added in the way of discussion. The history will frequently give a clue to the path which the infection is most likely to take and the probable point of localization. The types of organisms at the original site of the infection may give a clue to the drug most likely to be effective in medical treatment. Most important is the intimate knowledge of the fascial planes of the neck. Deep infections of the neck are far less common in medical practice today than they were ten to fifteen years ago. This, I believe, is due to more universal prophylaxis, the development of the sulfonamide drugs and the use of penicillin. The number has so appreciably decreased that I believe it is not fantastic to prophesy that in a short time deep infections of the neck will be rare.

Dr. Thomas E. Carmody, Denver: Many years ago Barnhill, Beck and I recommended that the field of otolaryngology be enlarged. I note that some of the speakers in the last year or two are recommending that. Dr. McCaskey has called attention to the mouth, which is something that was not mentioned a few years back. Many of the cases of Ludwig's angina (an-ji'nah)—I say that instead of McCaskey's angina (an'jin-ah)—originate in the mouth from an infection not only of dental abscesses but peridental abscesses and abscesses underneath the periosteum. Many of these abscesses are not found immediately, as Dr. McCaskey has said, but it requires eight or ten days before they will show up in the mouth even with roentgen examination, so that one needs to consider the delay in locating those besides the fact that the infection of the neck does not show up early. Osteomyelitis occurs frequently in these cases, and then it extends down into the floor of the mouth, either below the mylohyoid or above the mylohyoid, resulting in infection of the salivary glands, the peritonsillar spaces or the tonsillar spaces. There are also infections which travel downward. These not only affect the trachea but affect the post-tracheal fascia, and will extend into the mediastinum. Unless they are treated early, they will cause a great deal of trouble. Before the chemical drugs of today were available, roentgen radiation was frequently used to localize some of these infections, and it helped in many of them. Dr. McCaskey spoke of tracheotomy. Unless it is done early, it is of very little use. The abscesses should be opened and opened low enough. I have made the mistake of opening them high; the infection followed the muscle planes very low, and I had to open the abscesses lower down later on. Some patients were lost; some I was able to save.

Dr. Burt R. Shurly, Detroit: It gives me a great deal of pleasure to find that the general surgical problem is being treated more seriously by special workers in this field than it was in the past. This paper is timely and exceedingly fine. With this new era and with the current readjustment, individual and collective, this specialty is undergoing some of that change. The demand for an extension of our work to the borderline surgical fields is timely and necessary, and the members of the American Board are particularly interested in trying to help younger men to obtain a finer general surgical training. Particularly in recent time, the Board of General Surgery is cooperating in that questions on general surgical practice will be brought before those who come to examination. The interns and the residents, it is hoped will take perhaps an extra year of general surgical training. This subject of infections in the neck is one—it has been here always, and I feel that one should be qualified and competent to take on whatever may be necessary, surgically, medically or otherwise. In my earlier days one met with much bovine tuberculosis, in which the glands of the neck were involved, and surgical intervention was performed to remove those glands in a great many cases. Now, with the wonderful prevention of bovine tuberculosis and the marvelous health work, those glands infected by bovine tuberculosis have certainly diminished in a marvelous way. I feel keenly the tremendous value of sulfonamide drugs and penicillin. In the days of early diphtheria antitoxin, physicians were a bit tardy in giving sufficient dosage, and I consider that to be true now of a great many in the use of the sulfonamide drugs and penicillin. I have had a considerable number of patients with neck infections, tonsillitis, peritonsillitis and mastoids that have almost died. Over in Detroit and, I think, throughout the country at large, medical practice has been wonderfully influenced by what I think is the finest of the compounds, sulfadiazine and soda in large, sufficient and carefully watched dosage, and large doses of penicillin given intramuscularly promptly, early and plenty of them. This new era has come to the specialty with a tremendous value, which should be taken advantage of in the earliest stages of infection and followed through, never neglecting surgical intervention when the formation of pus makes that imperative.

Dr. Irving Wilson Voorhees, New York: My experience with these cases has been more limited than that of Dr. Shurly or Dr. Carmody. Over the past forty years I have seen 4 cases, all of them in private practice. All these cases followed dental extraction, except one, which was a deep infection following an unrecognized latent peritonsillar abscess on the right side. That patient had an early tracheotomy. Surgical intervention was performed following the tracheotomy, and the patient recovered in about three weeks. The important case was that of a gas bacillus infection in the left side of the neck following extraction of the lower teeth. This began about three days after the extraction, with a large hard swelling in the neck. Nothing was done until I saw the patient about five days after extraction. The dentist had sacrificed the tooth area, probably spreading the infection somewhat. The case was then turned over to a general surgeon, who made a small incision.

The whole area should be widely exposed, even if no pus is found, because the tension must be taken off the tissues and off the trachea so that tracheotomy may not become necessary. The timidity and the delay of some surgeons in not doing early tracheotomy needs to be emphasized. If one is going to do it at all, do it early. In this case all the tissues of the left side of the neck broke down. The muscles became a tarry, foul, stinking mass. They could be picked out by forceps. There was an opening from the mouth into the neck. The carotid was exposed and was seen pulsating. The gas bacillus was found in pure culture. The neck was irrigated every two hours with strong peroxide of hydrogen. I did not know then about penicillin or streptomycin or about introducing oxygen gas into the tissues. But I feel that in this particular case the oxygen "lavage" saved the man's life.

Dr. B. M. Kully, Los Angeles: As I listened to this excellent paper and the discussion, there was one point that came to my mind which I think should be emphasized. All use large doses of penicillin, but I think it should be remembered that penicillin may kill off the infection and not cause an absorption of the pus. There may be an abscess after the infection is gone. I should like to cite a case. A man came to me—he was a major in the Army—and gave a history of having been treated for a throat infection five months previously. I was able to contact his medical officer and found that he was given large doses of penicillin for a retropharyngeal cellulitis. He told me that his throat had never been right since and that he had some difficulty in swallowing. On examination he had a bulging of the posterior wall of his hypopharynx, low down just above his arytenoids. I aspirated it, got pure pus and a negative culture. It was incised and the man's symptoms were completely relieved. This was not a tuberculous abscess, because there was no involvement of the bone, and the man made an uneventful recovery. To me the case points to the fact that pus, even if all signs of infection have subsided, must be evacuated.

Dr. Carl H. McCaskey, Indianapolis: The first argument that I have to make is with Dr. Carmody. He and I have had friendly discussions on the pronunciation of angina (an'jin-ah) or angina (an-ji'nah). We in Indiana like angina (an'jin-ah) and we call it angina (an'jin-ah). The usage of a word determines the pronunciation, isn't that right, Dr. Carmody? (Dr. Carmody nodded his head.) All right, we have that settled. Dr. Brown's case of nephritis was interesting and shows that one should not jump to a conclusion in making a diagnosis. After he had carefully examined the patient and found his condition to be due to a nephritis, it set up an entirely different picture as to treatment. Dr. Ashley's discussion relative to the general handling of these cases was quite pertinent. With regard to chemotherapy, it is generally known that organisms become fast to chemotherapeutic agents. That is cited in the last case. Perhaps this person had become fast to the chemotherapy that had been administered to him. This also holds good for a period of time after the administration of these agents. For instance, every one, including me, grabs at the chemotherapeutic agents for almost every type of infection that comes along, without any rhyme or reason. If one is treating infection of the neck or infection anywhere it is well to know the type of infection with which one is dealing and the type of chemotherapeutic agent which applies particularly to that organism. That is the reason I mentioned that one should, if unable to find the type of organism from smear or culture, at least be well acquainted with the type of organisms which inhabit the area. Therefore, one has some clue to the type of treatment to be followed. The chemotherapeutic agents will not absorb pus. One must drain it to get results, and that goes for the original site of infection. For instance, in an acute mastoid infection, if there is pus in the neck and in the mastoid, the mastoid abscess must be drained before relief will be obtained from drainage of the pus in the neck. I brought up this subject only for this particular reason: I hoped that a greater number of surgeons would become interested in some of these conditions of the neck. No one should attempt to do surgery of the neck who is not well prepared for it. He must know his anatomy, his pathology and his bacteriology.

THE PROBLEM OF GASTRIC CANCER

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A diagnosis of cancer of the stomach strikes fear into the hearts of patients. And well it might, when it is realized how relatively small the ultimate salvage of life is in patients whose disease is so diagnosed. One of the most favorable reports, that of Walters, Gray and Priestley[1] (1942) has suggested that only 6 per cent of their patients whose disease is diagnosed as gastric cancer are alive five years later. Weese[2] (1940) stated that of 883 patients admitted to the Tübingen Surgical Clinic between 1921 and 1932, only 8 per cent were alive five years later. Livingston and Pack[3] (1939) stated that definitive cures of unselected patients with gastric cancer is probably in the range of 2 per cent. In other words, it appears that 92 to 98 per cent of patients who have gastric cancer will die of the disease within five years. However, of patients who survive resection for gastric cancer for a period of five to seven years, Berkson[4] (1942) has expressed the belief that the subsequent life expectancy is about the same as for normal persons. The irony of the matter is that approximately only 25 per cent of patients who have gastric cancer are suitable candidates for a curative type of operation. In the Mayo Clinic series of those who survived resection (traced patients) 28.9 per cent survived five years and 20.4 per cent ten years. Of the resected cases in the Tübingen series, 19 per cent were alive five years later. Gastric cancer is curable, but the problem is to recognize the presence of the disease in time, so that the patient will not be denied the real hope that timely and well performed surgical intervention holds out to sufferers from gastric cancer.

Moreover, cancer of the stomach is the most frequent of all malignant growths. In regard to its incidence, Livingston and Pack[3] (1939) have written the following: "There are more deaths from cancer of the stomach than from all malignant tumors of lip, tongue, cheek, tonsil, pharynx, larynx, salivary glands, thyroid, male and female, breast, ovary, uterine cervix and corpus uteri *combined*." Cramer[5] (1937) has stated that, from country to country (European), the incidence of cancer in a certain organ may vary considerably; yet the overall mortality of cancer for populations of various countries is approximately the same. The death rate for cancer of the stomach is high in almost all countries, and deaths from gastric cancer comprise from 25 to 40 per cent of all deaths from cancer.

Deaths from cancer in this country rank only next to cardiac disease as the most frequent cause of death. And of the 150,000 annual deaths from cancer in the United States, approximately 40,000 persons die of gastric cancer. Moreover, as the proportion of aging people in the population increases, it is obvious that

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the total number of deaths from cancer as well as gastric cancer will increase. Truly, cancer and especially gastric cancer, the most frequent of all cancers, is a problem of public health of first importance.

ETIOLOGY

Experimental.—Fibiger's[6] (1913) conclusion that the eating by rats of cockroaches infested with Gongylonema neoplasticum was the cause of spontaneously occurring gastric cancers observed in those rats has been set aside by the demonstration that a similar papillomatosis of the preventriculus can be brought about in mice and rats by a vitamin A deficient diet.[7] Lorenz and Stewart[8] (1941) have observed the occurrence of an adenocarcinoma in the glandular portion of the stomachs of mice after the injection of 20-methylcholanthrene into the gastric wall. They have also obtained similar malignant tumors of both the stomach and intestine by the oral administration of 20-methylcholanthrene in light liquid petrolatum.[9] Strong,[10] (1945) employing hybridized mice, succeeded in perpetuating the carcinogenic influence of methylcholanthrene in subsequent generations of mice without continuing the administration of the carcinogen. Roffo[11] (1939) stated that he produced adenocarcinoma as well as sarcomas in rats fed fats or cholesterol heated to 300 C., a claim which is still awaiting confirmation. Peacock and Kirby[7b] (1944) have shown that, unlike benign gastropapillomatosis associated with dietary deficiency, papillomas induced with carcinogenic hydrocarbons (20-methylcholanthrene) are not prevented and fail to disappear with the addition of large amounts of vitamin A to the diet. An excellent review of the experimental aspects of gastric cancer was written by Peacock[12] of Glasgow, Scotland, in 1943. Excellent reviews have been published by Klein and Palmer[13] (1941) and Ivy[14] (1945).

Clinical.—On the clinical side, there is a wide diversity of opinion concerning the origins of gastric cancer. Most authorities agree that gastric cancer probably does not originate *de novo* from a normal gastric mucous membrane. There is no unanimity of opinion, however, concerning the importance of items which it is believed may give special encouragement to the development of gastric cancer; among these are to be enumerated: (1) the benign polyp, (2) atrophic gastritis and (3) gastric ulcer.

Ulcer.—Much debate has hedged about the problem of the extent to which a benign ulcer may favor the development of gastric cancer. Much of that discussion has generated more heat than light. However, there can be no doubt concerning the finality of the proof that cancer occasionally develops in a gastric ulcer. Every gastric surgeon of experience has seen large gastric ulcers which are found to be benign after excision. After a few years the patient may return with unmistakable evidence of cancer in the residual gastric fragment. A more detailed examination of the ulcer by the pathologist usually succeeds in finding the area which was carcinomatous in the initial specimen. Two such cases have been observed in this clinic within the past few years. These ulcer-cancers in which the malignant growth occupies only a small portion of an ulcer of long standing have been well described by pathologists. In addition, several patients have been seen in whom a gastrojejunostomy had been made previously elsewhere for benign gastric ulcer. With the lapse of years, gastric cancer may follow. This occurrence has been noted in patients in this clinic as long as eight and in 1 instance twenty-five years after the performance of the gastrojejunostomy.

No one doubts the thesis that an unhealed burn, a chronic sinus or an ulcer on the surface of the body may give rise to a cancer. There seems to be little reason to doubt that this same transition may occur in a gastric ulcer. Moreover, Magnus[15] (1937) has reported that a moderate to a severe degree of atrophic gastritis has been observed by him in every gastric ulcer specimen examined.

An even more cogent reason for looking on the gastric ulcer with suspicion is that the hazard of confusing benign and malignant ulcers is real. In other words, no reliable criteria are available to distinguish sharply and consistently by diagnostic means between benign and malignant gastric ulcer. For the stomach as a whole, it has been said that approximately 10 per cent of ulcers which are believed to be benign by conventional diagnostic measures are found to be cancerous when the ulcer is removed. Moreover in the immediate prepyloric area, the Boston group of observers have stated their belief that cancerous ulcers outnumber benign ulcers three to one.[16] Finsterer[17] (1938) has expressed the belief that if patients with ulcerocancer underwent operative intervention six months to a year earlier the cures would be about 90 per cent.

Since gastric resection for ulcer can be performed by the experienced surgeon at risks well below 5 per cent, there seems little justification for the physician to assume so conservative an attitude toward the chronic gastric ulcer that the patient's future may be compromised thereby. This is one of many factors which contribute to delay in bringing the patient with gastric cancer for early operation.

Atrophic Gastritis.—Konjetzny[18] has been the keenest proponent of atrophic gastritis as a frequent precursor of gastric cancer. Schindler[19] has also favored this view. This idea gets its strongest support from the frequency with which pernicious anemia is complicated by gastric cancer. That atrophic gastritis is a regular accompaniment of pernicious anemia has long been known. Magnus and Ungley[20] (1938) pointed out that the atrophy is not patchy in pernicious anemia as in most idiopathic achlorhydrias but is diffuse and moreover involves all the layers of the gastric wall, especially the corpus and fundus, resulting in a parchment-like thinness of the stomach. Kaplan and Rigler[21] (1945) have stated that the incidence of gastric cancer in patients dying of pernicious anemia is 12.3 per cent, or three times the expected autopsy incidence of gastric cancer in patients belonging to the same age group. Rhoads[22] (1941) previously had summarized the clinical and pathologic evidence relative to the relation of pernicious anemia to gastric cancer. His observations are in general accord with those of Kaplan and Rigler. Moreover, gastric polyps are of frequent occurrence in the atrophic gastric mucous membrane of patients with pernicious anemia. Madelaine Brown[23] (1934) pointed out this unexpected association in an autopsy survey of patients who had died of pernicious anemia, an observation which Kaplan and Rigler later confirmed.

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Rodgers and Jones[24] (1938) noted the presence of superficial hemorrhagic erosions and ulcers on gastroscopic examination of patients with atrophic gastritis and idiopathic achlorhydria. This is an important finding, and one which justifies continued observation to determine the fate of such erosions.

Polyps.—Most authors who have studied precursors of gastric cancer have incriminated the polyp, including Borrmann[25] (1926), Konjetzny[18a] (1938), Schindler[19] (1941) and Westhues[26] (1942). Tracy Mallory[27] (1940) has described the presence of noninvasive carcinoma in situ in gastric polyps and has stated that "their pronounced tendency toward malignant degeneration" is generally admitted. Kaplan and Rigler[21] wrote concerning the gastric polyp found in patients having pernicious anemia that: "the demonstration of gastric polyps in association with pernicious anemia has almost the same significance as the demonstration of carcinoma *per se.*" Westhues[26] (1942) expressed the belief that most gastric polyps are essentially tumors and are not the result of inflammatory gastritis, as is suggested in the work of Konjetzny. Spriggs and Marxer[28] (1943), however, dissented from this view and have followed a number of patients with gastric polyps over a period of years without observing evidences of cancer.

In this clinic a study has been made of patients past 50 years of age who are achlorhydric to histamine, and a fairly large number of such polyps have been discovered. At present 15 are under observation. At one time the majority opinion in this matter was followed and the gastric polyp was regarded as a likely precursor of gastric cancer, which, with the passage of sufficient time, it well may be. After the performance of gastric resection for a fairly large number of such patients, there has finally been a reversion to the policy of following them three or four times a year by gastroscopic and roentgen examinations. At present there are 2 such patients under observation, who have both pernicious anemia and gastric polyps.

The description of Borrmann[25] (1926), Mallory[27] (1940) and others of heteropia of the gastric mucous membrane in such polyps together with histologic evidence of noninvasive cancer suggests obviously the need for caution in pursuing a conservative policy. Moreover, in 1 instance a patient who underwent gastric resection for benign polyp in 1941 returned with gastric bleeding three years later but at that time refused to permit reoperation. When pain again recurred the patient acceded to operative intervention (1945), but an irremovable cancer, which had spread beyond the confines of the residual gastric pouch, was found.

Unfortunately, biopsy cannot readily be performed through a gastroscope. It may well be that occasional removal of such allegedly benign gastric polyps through a small abdominal incision will be warranted in the light of the great practical importance of the considerations involved.

EXTRINSIC FACTORS

There is a sharp difference of opinion among persons interested and experienced in the problem of gastric cancer in regard to the rôle of extrinsic factors in the origin of gastric cancer in man. There are those who believe that the so-called constitutional susceptibility is important. Others would indict in such an analysis exogenous factors, particularly diet. Nettleship[29] (1943) has discussed this problem in an interesting and informative manner and has listed such factors as diet, age, heredity, heat, alcohol, bacteria, viruses, allergy and infections.

The influence of temperature of ingested liquids and food and the irritant quality of liqueurs, alcohol, spices and rough foods on the esophageal or gastric mucous membranes must perforce be considered. When, however, one reaches the lower alimentary tract, especially the rectum and colon, all such influences have been dissipated. Then, apart from so-called constitutional predisposition, the important question arises of carcinogens in the intestinal content itself.

Age is, of course, an important determinant in all forms of cancer. Herring[30] (1936) has pointed out that states with the largest percentage of their population above 45 years of age have the largest mortality due to cancer. New Hampshire, with 30.3 per cent of its people above 45, has an annual cancer mortality rate of 155.4 per 100,000, the highest in the United States.

Dr. David State of this clinic has undertaken the task of interrogating the relatives of patients with gastric cancer to determine the frequency of cancer in their families. In the families of 200 patients with gastric cancer, a history of cancer was obtained in 31.6 per cent; in half of these instances (15.6 per cent) a history of gastric cancer was elicited. Dr. State interrogated the relatives of 200 patients with gallbladder disease (nonmalignant), of 200 with cancer of the colon and rectum and of 200 patients seeking treatment because

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of hemorrhoids. Interestingly enough, the overall incidence of cancer in the family was much the same: for gallbladder disease 26 per cent; for cancer of the colon and rectum 30.7 per cent, and for hemorrhoids 29.6 per cent. The only conclusion which one legitimately may draw from these observations is that cancer is frequent and approximately 30 per cent of families give a history of cancer sufferers amongst their members.

THE PROBLEM OF GASTRIC CANCER

These facts afford evidence of the great importance of the problem presented by gastric cancer. This perplexing problem obviously comprises many factors, most of which have had considerable discussion. Several well-known surgeons, who in the estimation of their colleagues were authorities on the clinical aspects of the disease and who essayed to instruct others in the early manifestations of gastric cancer, recognized the signs of the disease in themselves too late to benefit by that therapeutic agent of which they themselves were masters. Among others are to be enumerated the names of Johannes von Mikulicz, W. J. Mayo, D. P. D. Wilkie and Martin Kirschner. The late R. D. Carman, well-known roentgenologist who contributed a useful sign to the roentgenologic diagnosis of gastric cancer, had a gastric cancer which was inoperable before he recognized the signs of the disease in himself.

This circumstance in itself suggests that there is no symptom complex by which the disease can be identified, a situation which a number of other particulars and occurrences corroborate. The absence of warning signs of approaching danger accounts in large measure for the circumstance that so many patients with gastric cancer are inoperable when they first consult their physician. The German poet Theodor Storm, who wrote "Immensee," which a number of us studied in earlier years, died of gastric cancer. He wrote a poem entitled "Beginn des Endes"[31] concerning his illness, which described well the insidiousness of gastric cancer.

Beginning of the End

'Tis but a prick, 'tis scarce a pain,
  Just felt, to which no name you give:
Henceforth it speaks again-again,
  Uneasy now you have to live.

If to complain you try—of what?
  You cannot put it into speech:
Within you say, "Indeed 'tis naught!"
  Henceforth it holds fast like a leech.

So seldom strange your world does grow,
  And quickly are you stript of hope,
Until at last you really know
  That with Death's shaft you cannot cope.

Storm died in 1888, seven years after Billroth had the first operative success with gastric cancer. The roentgen ray, discovered in 1895, has since become the most reliable means of diagnosing gastric cancer. While this agent even in expert hands is not infallible, it approaches a state of excellence achieved by only a few diagnostic agents. The problem is to get those afflicted with gastric cancer in the early stages to consult expert roentgenologists in time, so that surgical intervention will benefit a larger number of patients with gastric cancer.

It seems strange indeed that a malignant tumor can attain inoperable proportions in so active and useful an organ as the stomach without revealing early signs of its presence. I myself have removed from a young girl's stomach a hairball which produced a tumefaction on the abdominal wall, which outlined the stomach precisely. Yet after the bezoar was removed, the patient insisted that the sense of satiety after eating was acquired just as quickly as when that large hairball filled the gastric lumen! In other words, it is strange to what extent this organ, which can manifest signs of functional derangement readily in the presence of emotional or physiologic disturbances which have their origin elsewhere in the body, can accommodate itself to extensive local encroachment on its functions without revealing a trace of disorder.

This ability is peculiar to all hollow viscera; and inasmuch as the gastric lumen is so large, it is understandable that early detection by functional derangement in corporic or fundic gastric lesions is unusual, save as indicated by hemorrhage. It takes approximately 70 cc. of blood to produce a stool in which the presence of blood may be detected grossly. Two to 4 cc. of blood suffice usually to give a positive guaiac test in the stool.

How, then, is one to suspect the presence of a gastric cancer? Obviously one's primary concern is not the heedlessness and indifference of patients to their symptoms, though this item as well as the reaction of physicians to the complaints of patients is not without importance for the problem—one's primary concern, if one is to be realistic, must be with the circumstance that a gastric cancer may become inoperable before its presence causes any perceptible derangement of function.

Cutaneous cancers occur largely beyond the wrist line and above the collar line. Moreover, they grow slowly. The significance of a small blemish of the skin which fails to heal may not be appreciated immediately, but its very presence urges its owner or his friends or relatives to have something done about it. Even in cancers which are accessible to the examiner's hand but hidden from the sight of others early detection is by no means regular, and the frequency with which those who suffer from cancer of the tongue, breast, uterus and especially its cervix, vulva, penis, prostate and rectum come late for treatment is a matter of general knowledge.

To permit the recognition of a cancer, an area of induration, tumefaction or ulceration must be present. And how long have cancer cells been present to permit such an occurrence? Undoubtedly, the time interval is variable and is dependent largely on the rapidity of growth. In patients for whom I have performed what I regarded as a radical operation for cancer of the stomach only to learn subsequently that cancer cells were detected by the pathologist in the most proximal line of resection, it has been my observation that these patients usually remain asymptomatic for eighteen to twenty-four months. This interval of freedom from symptoms in such palliative gastric resections gives some indication of how long it takes a cancerous tumor which already has exhibited invasive qualities to grow and reassert itself.

The greatest hurdle to early detection of internal cancer is the absence of a reliable immunologic test for cancer. Such a diagnostic agency is the hope of every clinician who must wrestle with the intricate complexities of the recognition of cancer. And whereas such specific tests for cancer are well within the realm of achievement, there is little promise that such serologic tests will be available soon.

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[31] Kindly translated for me by Miss Elizabeth Nissen, assistant professor of romance languages, University of Minnesota.

FREQUENCY OF GASTRIC CANCER

The death rate from cancer of the stomach in the United States is approximately 30 per 100,000 for the population as a whole. At the peak incidence of occurrence, which is between 400 and 500 for men between 75 and 80 years of age, only 1 man among every 200 to 250 will die each year of gastric cancer. There seems to be a fairly sharp rise in mortality due to gastric cancer in men at 55 and in women at 65 years of age. According to Kirschner[32] (1940) more than half the deaths from cancer among men in Germany are due to gastric cancer. And the studies of Dormanns[33] (1939) suggest that approximately 33 per cent of all cancer deaths in Germany are due to gastric cancer.

Both vital statistics and necropsy statistics are mortality records. They deal with the frequency of cancers among the dead, not the living. There is a certain concordance between the causes of death in these mortality records. In the main, autopsy records are perhaps weighted with more than a representative number of serious illnesses which demand hospitalization, to which category of disease cancer belongs. Yet the greater accuracy of diagnosis at autopsy offsets in large measure the disparity of uneven distribution of disease present in autopsy statistics.

Frequency of Cancer in Autopsy Records

	No. of Autopsies	Percentage of All Deaths Due to Cancer		Percentage of Cancer Deaths Due to Gastric Cancer	
		Males	Females	Males	Females
Berman[34] (1944) (Minnesota 1933 1938) all ages............	11,543	17.0	19.0	...	...
Dormanns[35] (1937) (1925 1933) 42 German institutions; all males over 20 years.........	124,827	17.7	....	6.0	...
Lummerich[36] (1936) (1925-1934) Hamburg, Germany; men and women over 20 years	10,566	17.4	20.7	6.7 8.8 (50-70)	4.3 5.0 (40-70)

Berman[34] (1940) examined the autopsy records of the Department of Pathology of the University of Minnesota between 1933 and 1938, during which years 11,543 autopsies were performed. Berman found that 19 per cent of the deaths in females over 1 year of age was owing to cancer and that for males this figure was 17 per cent.

Dormanns[35] (1937) analyzed the causes of death in 124,827 autopsies performed on men over 20 years of age in forty-two pathologic institutes in Germany between 1925 and 1933. Of these deaths 22,139, or 17.7 per cent, were due to cancer; 33 per cent of all cancer deaths were caused by gastric cancer. Dormanns, however, included only carcinomas and excluded lymphoblastomas, brain tumors and sarcomas, which together constitute a rather large group. In Dormanns' series 6 per cent of all cancer deaths were due to gastric cancer.

Lummerich[36] (1936) examined the autopsy records of the Barmbeck Krankenhaus in Hamburg for the years 1925 to 1934. There were 10,566 autopsies done on men and women over 20 years of age, of which number 19.1 per cent died of cancer. The cancer mortality for women over 20 was 20.7 per cent; for men, 17.4 per cent. In Lummerich's series 6.7 per cent of all deaths in men over 20 years of age were from gastric cancer; in women this figure was 4.3 per cent. In women between the ages of 40 and 70 gastric cancer was responsible for 5 per cent of the deaths, and in men between 50 and 70, 8.8 per cent of all deaths were caused by gastric cancer. In other words, among women between 40 and 70 years 1 in 20 deaths was due to gastric cancer and among men, 1 in 12. (See the accompanying table.)

AN ATTEMPT TO FIND PRECURSORS OF GASTRIC CANCER

Together with colleagues in the Departments of Medicine, Pathology and Radiology, my associates and I began in July 1945 to scrutinize carefully all patients with demonstrated histamine achlorhydria (no free hydrochloric acid after three successive 0.5 mg. doses of histamine given at intervals of thirty minutes) in men over 55 and in women over 65. Since Jan. 1, 1946 men and women past 50 years of age have been accepted for study. All such patients found to be achlorhydric, whether men or women, have been subjected to careful roentgen studies and whenever feasible to gastroscopic examination. During this interval there was a registration in the outpatient clinic of the University Hospitals of 1,949 eligible persons (from the point of view of age). Of this number, 1,070 patients (649 men and 421 women) were submitted to fractional gastric analysis with histamine. Only 205 patients were found refractory to all three doses of histamine; 62 additional patients remained achlorhydric after two doses and 34 to a simple injection of histamine. In all there were 301 achlorhydric patients available for study. To this group of cases an earlier series of 85 additional cases studied by Dr. Macnider Wetherby of the Department of Medicine was available for continued study. In addition, 79 patients with known pernicious anemia were also available to us.

Among these 464 patients who were achlorhydric to histamine, 15 patients with polyps have been found—the most fruitful observations of the study. In a large percentage of the patients coming to this clinic with carcinoma of the stomach, the disease has already been diagnosed before their arrival, or the presence of such a lesion is suspected by the first observers to see the patient in the outpatient clinic. In consequence, during the fifteen month period that this study has been under way, only 3 undetected gastric carcinomas have been uncovered. Only 1 of these was early. Moreover, this patient's lesion was missed by roentgen examination; he also had a cecal cancer, and when operative intervention was undertaken by the resident, Dr. Arnold Kremen, the gastric lesion was found. Both lesions were dealt with successfully at the same operation. A similar occurrence happened with a rectosigmoidal cancer in a patient in whom no search for a gastric cancer had been made preoperatively. This patient, aged 75, had extensions of the lesion into a loop of terminal ileum. A fairly large gastric cancer was a surprise finding. Three simultaneous resections were carried out successfully for the patient. The third patient, and the only isolated instance in this group of patients in which the detection of a gastric cancer was due solely

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32. Kirschner, M · Zur Bekampfung der Krebskrankheit, Chirurg **12:** 177, 1940.

33. Dormanns, E Das Oesophaguscarcinom · Ergebnisse der unter Mitarbeit von nein und dreizig pathologischen Instituten Deutschlands durch geführten Erhebung über das Oesophaguscarcinom (1925 33), Ztschr. f. Krebsforsch **49:** 86, 1939.

34 Berman, L Cancer as a Cause of Death in the University of Minnesota Necropsy Collection, Thesis, University of Minnesota, June 1940.

35 Dormanns, E · Die vergleichende geographisch pathologische Reichs Carcinomstatistik 1925-1933, Ztschr. f. Krebsforsch **45:** 471, 1937.

36. Lummerich, F · Statistik der Carcinomtodesfalle nach Sektions material 1925-1934 des Allg Krankenhauses Barmbeck in Hamburg, Ztschr. f Krebsforsch **44:** 476, 1936

to study suggested by the presence of achlorhydria, was a large man of 73 with hypertension, who succumbed after operation from hemiplegia. The tumor was large, and the operation, undertaken by Dr. David State, was essentially a palliative resection.

This is not the record of an accomplishment which justifies enthusiasm. The greatest promise of the study so far appears to be the continued observation of the patients found to have polyps and the search for gastric polyps in other achlorhydric patients. It is an interesting observation that patients with gastric polyps are almost uniformly achlorhydric, a circumstance to which Brunn and Pearl [37] (1938) have directed attention.

Among the 140 patients with gastric cancer, whose records have been reviewed in this study by Drs. Robert A. Hebbel and David Gaviser, only patients with polypoid cancer were uniformly achlorhydric. The incidence of achlorhydria in ulcerative and diffuse cancer (Borrmann's classification) varied between 55 and 67 per cent. The polypoid variety, the type of gastric cancer with the most favorable prognosis, is unfortunately uncommon, being observed only 5 times among the 140 patients.

St. John, Swenson and Harvey [38] (1944) subjected 2,413 patients over 50 years of age to a brief fluoroscopic survey of the stomach. In this group of patients, 2 silent gastric cancers and 1 lymphosarcoma were found, an incidence of unsuspected gastric malignancy of 1.24 per 1,000 patients. No gastric polyps were observed in this study. Dailey and Miller [39] (1945) reported a series of 500 patients subjected to barium examination of the stomach. These examinations were performed on presumably normal men who were free from digestive complaints and were over the age of 45. Three gastric lesions were found: a benign gastric ulcer, a polyp and antral gastritis.

DISPOSITION OF PATIENTS IN WHOM DIAGNOSIS OF GASTRIC CANCER IS MADE

In the light of present knowledge, the only worth while treatment for patients with gastric cancer is surgical extirpation. The most radical surgery with the lowest mortality is the best surgery. William J. Mayo, a keen exponent of gastric surgery, gave the surgery of gastric cancer in this country an early impetus, which practice should have had wider emulation in other clinics. The accomplishments of surgery in gastric cancer during the past decade have been real. The lament of surgeons is that so many patients come late. The fundamental clinical problem in gastric cancer is not improvement in gastric surgical procedure, though considerable opportunity for improvement exists there, too. The problem which demands solution in the management of gastric cancer is earlier recognition.

Surgeons schooled and experienced in the disciplines of visceral surgery can resect the stomach for cancer with risks which are not far in excess of those assumed by patients undergoing resection for benign ulcer. Obviously, the number of patients who are advanced in age and in poor physical condition together with the more aggressive character of the surgical removal with reference to lymph nodes and adjacent structures does increase the risk. It was not so long ago that the operative mortality from total gastrectomy was approximately 50 per cent. However, surgeons have learned to deal more effectively with the technical details of suturing the esophagus to the jejunum and have reduced that risk considerably. A technic which I have used to advantage is to suture the mesenteric border of the jejunum behind the esophagus. This maneuver permits the placement of two rows of interrupted silk sutures which anchor the posterior wall of the esophagus firmly against the wall of the jejunal segment. The anastomosis then may be made at the antemesenteric border. Employment of the anterior peritoneal flap overlying the subdiaphragmatic esophagus as described by Lahey [40] (1928), Kirschner [41] (1933) and Jones [42] (1945) is utilized to cover the suture line anteriorly.

In this clinic the closed anastomosis has been employed routinely in all resections of the gastrointestinal canal since 1938. It affords the greatest opportunity for performing the operation in an aseptic manner. All these items have been described previously [43] and will not be repeated here.

The importance of excision of the greater omentum has been stressed particularly by Groves [44] (1910) and Finsterer [45] (1930). An equally important item is complete excision of the gastrohepatic omentum above the lesser curvature. By trimming the avascular and normally somewhat diaphanous membrane down from the hepatic edge and isolating and tying the left gastric artery just after it leaves the celiac axis, the entire lymph-node-bearing area of the lesser curvature can be removed. Near the esophageal juncture this procedure is carried out most readily in a retrograde fashion. By separating the leaves of the gastrohepatic omentum near the site at which the left gastric artery meets the lesser curvature, the upper attachments of the gastrohepatic omentum can readily be removed up to and including that portion attached to the esophagus. After the gastric wall is bared between the leaves of the gastrohepatic omentum where the branches of the left gastric artery enter it, a long curved hemostat or dissector can be run up this groove. A counter opening is made just over the subdiaphragmatic esophagus, and the remnants of the gastrohepatic omentum are easily removed from the gastric wall. This maneuver removes the entire blood supply of the lesser curvature, leaving the residual gastric fragment dependent on the small gastric arteries which come from the splenic or the left gastroepiploic artery.

Direct extension of the cancer into adjacent organs such as the pancreas, the left lobe of the liver and the transverse colon necessitates consideration of removal of the segments of tissue involved—extensions of the operation for gastric cancer which are fully justified in otherwise suitable cases. Moreover, lymphatic extensions into the transverse mesocolon are seen now and then, a circumstance which may suggest that the excision of the entire transverse mesocolon together with the spleen is the wisest procedure. For extensions in the head of the pancreas, unfortunately this principle of operative procedure would frequently demand performance of the Whipple operation, a rather formidable enlargement of the operation for gastric cancer.

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[37] Brunn, H., and Pearl, F.: Multiple Gastric Polyposis, Am. J. Surg. **40:** 51, 1938.

[38] St. John, F. B.; Swenson, P. C., and Harvey, H. D.: Experiment in Early Diagnosis of Gastric Carcinoma, Ann. Surg. **119:** 225, 1944.

[39] Dailey, M. E., and Miller, E. R.: Research for Symptomless Gastric Cancer in Five Hundred Apparently Healthy Men 45 and Over, Gastroenterology **5:** 1, 1945.

[40] Lahey, F. H.: Complete Removal of the Stomach for Malignancy with the Report of Five Surgically Successful Cases, Surg. Gynec. & Obst. **67:** 212, 1928.

[41] Kirschner, M.: Operative Surgery: The Abdomen and Rectum, translated by I. S. Ravdin, Philadelphia, J. B. Lippincott Company, 1933, vol. 1, p. 179.

[42] Jones, T. E., and Kehm, R. W.: Total Gastrectomy: Report of Eight Cases, Surg., Gynec. & Obst. **80:** 534, 1945.

[43] Wangensteen, O. H.: The Surgical Problem of Gastric Cancer, with Special Reference to Closed Method of Gastric Resection, Coincidental Hepatic Resection and Preoperative and Postoperative Management, Arch. Surg. **46:** 879 (June) 1943.

[44] Groves, R.: Radical Operation for Cancer of the Pylorus, with Special Reference to the Advantages of the Two-Stage Operation and to the Question of the Removal of the Associated Lymphatics, abstracted, Brit. M. J. **1:** 366, 1910.

[45] Finsterer, H.: Zur Klinik und chirurgischen Behandlung des Magenkrebses, Arch. f. klin. Chir. **159:** 230, 1930.

One of the extensions of gastric cancer which is most difficult to deal with is the excision of adherent lymph nodes in juxtaposition to the common biliary duct, hepatic artery and portal vein.[7] By removing the peritoneum overlying these structures and by isolating and dividing the gastroduodenal artery, the hepatic artery may be displaced upward and to the left, permitting at least partial separation of these structures and removal of involved lymph nodes.

Palliative gastric resection in the presence of hepatic metastases is fully justified. The palliation achieved thereby averages in our experience about fifteen months. For hepatic metastases from primary rectal or colic cancers, however, removal of the local lesion has resulted in extending the life of a few patients two or three years and longer. This circumstance suggested the possibility of excising the hepatic metastases in patients undergoing colic resection for cancer, an operative procedure which now has been carried out in several patients. The problem of hemostasis in resection of the liver is not difficult, and, knowing the great capacity of the liver to regenerate, the feasibility of extensive hepatic resections as well as reoperation for the removal of additional previously undetected hepatic metastases is within the range of possibility.

Whereas surgeons can perform these operations, mere discussion of the magnitude of the undertaking suggests definitely that a greater salvage of life from gastric cancer is to be obtained by having the patients submit to operative intervention before it is necessary that the resection be so radical.

The experience of this clinic suggests that these radical operations for gastric cancer, including total gastrectomy, can be performed at a reasonable risk. For the past four years, during which time 160 resections (including total gastrectomies) were performed, the hospital mortality was 8.1 per cent. In 1945 there were 62 resections (including 9 total gastrectomies) with 3 deaths (4.8 per cent mortality).

The resection rate of patients operated on for gastric cancer in this clinic has been approximately 90 per cent for several years. In other words, palliative resections are being undertaken in a number of instances. In consequence, the per cent of long survivors after operative intervention will probably not be as great as that in clinics where resection is confined largely to cases with a favorable outlook. My colleague, Dr. David State, is compiling the late results in patients operated on for gastric cancer in the last ten years. The follow-up, though not complete, suggests definitely that a radical operative procedure holds out real promise to those who have gastric cancer.

Heretofore, many surgeons have performed a 95 per cent resection in many patients in whom total gastrectomy would have been a better operation for cancer—and solely because the subtotal operation is a safer procedure. With improvement of the mortality score of total gastrectomy, and with more consistent performance of a complete operation for gastric cancer which deals satisfactorily with the problems of the lymph nodes and local extension, the number of long survivors after operation will increase considerably. The development of a technic of esophageal resection holds out hope for those patients whose lesions involve both the fundus of the stomach and the distal end of the esophagus, a neoplasm which up until a few years ago was regarded as inoperable. The surgical management of these lesions is primarily a problem of the esophagus and has not been dealt with in this article.

THE NEED FOR REAWAKENING INTEREST IN THE EARLIER DIAGNOSIS OF CANCER

The proportions to which a gastric cancer may grow without causing symptoms have already been indicated. Moreover, patients with cancers which affect organs within reach of the examiner's hand as a group also seek treatment late. There is undoubtedly a time when every maligant tumor is a local lesion. In approximately 25 per cent of patients with gastric cancer coming to autopsy, the disease involves only the stomach and the adjacent lymph nodes. In any cancer involvement of the lymph nodes influences the prognosis in a distinctly unfavorable manner. The lapse of time from the assumption of histologic characteristics of cancer by mucosal or epithelial cells to the invasion of the normal submucosal or subepithelial tissue is undoubtedly a variable phenomenon. In the main, gastric cancers are of a high grade of malignancy and probably demonstrate invasive features early. However, even for gastric cancer Mallory[27] (1940) has shown that such tumors may remain as carcinomas in situ for rather long intervals of time.

The interest of the public in cancer is real. Many persons, perhaps some physicians among them, believe that a Cancer Commission with authority to draft competent workers with research experience—such a group to pool their knowledge and talents—could with adequate funds untie the gordian knot of the problem of cancer in a period of five to ten years. Without question such a planned and coordinated attack on the problem of cancer would bring to light many new facts. The process of accumulating new facts is slow. The construction of an idea or an approach to a problem by experienced persons in possession of the assembled facts progresses directly with the availability of known facts. If they are few, the process will be as slow as constructing a house from bricks when only an occasional brick becomes available at periodic intervals.

Such appears to be the situation in the experimental approach to the problem of cancer. Distinct progress is being made from year to year. Until the stock of available information is greater, it cannot be expected that a preventive agent against cancer or a revolutionary therapeutic agent to combat established cancer will be found quickly.

The public looks to the members of the medical profession for intelligent guidance in matters of health. The public is willing to spend unlimited funds to conquer the scourge of cancer. The important contributions of scientists to the winning of the war has the public wondering whether use of the same tactics would not soon end the tyranny of cancer. Certainly cancer research should continue with unremitting vigor. But until many more facts concerning cancer are known it is unreasonable to expect that the experimental approach to the problem will quickly turn up a cure for cancer.

However, it is known that 1 woman of every 5 past 40 years of age is destined to die of cancer and that 1 of 6 men past 50 similarly will die of cancer. This is not a pleasant prospect, especially when one realizes that for a large number of cancers, especially those of the digestive tract, which constitute more than 50 per cent of all fatal cancers, the problem is primarily one of recognition and not of cure. In other words, granted early diagnosis, a large number of cancers are curable.

It is known that a large per cent of persons will have cancer and die of it. The only unknowns are: (1) which persons, (2) in what organ and (3) when?

Let us consider the case of the mouse. The average life span of the mouse is approximately sixteen months or four hundred and eighty days. In cancerous strains of laboratory mice in which cancer of the breast develops, tumors begin to make their appearance ten to twelve months after birth, or when about 60 to 75 per cent of the life span of the mouse has been lived.

Approximately 90 per cent of fatal cancers are observed in persons over 40 years of age. In the female there is a definite increase in the mortality due to cancer at 40 years of age. The life expectancy of persons who have already reached the age of 50 is approximately twenty years. In women when approximately 60 per cent of the life span has been spent and in men when 70 per cent of the allotted time has run out cancer is most likely to make its appearance. Workers in cancer who deal with mice examine the mice once a week for evidence of tumors. Should not physicians observe the same care in examining men and women for evidences of cancer as experimental workers do in caring for mice?

Cancers in situ perhaps will not often be recognized in the stomach. Yet periodic examination of all men and women who have reached "the cancer years" undoubtedly will make an important contribution to earlier recognition of cancer.

Will the public which is so keenly interested in a cure for cancer be cooperative in this effort? There is need for Cancer Detection Clinics set up at strategic places with competent specialists in the various branches of medicine and surgery. Moreover, there is need for the cooperation of all men and women in attending such clinics, when established, approximately three times a year. If the support in funds and of the public in attendance on such clinics is forthcoming, I believe that it will represent the best use of the available knowledge in dealing with the problem of cancer. The promise of the future is in the discovery of new facts which will lead to new ideas and a final solution of the problem of cancer. One must plan for one's own generation, however, and for one's children and grandchildren, as well as for generations yet unborn. To that end, one must be realistic and deal with situations as they are and not with situations as one would have them.

The worth of the Cancer Detection Clinic remains to be proved. But granted adequate financial support and backing by the members of the medical profession and cooperation by the public, I believe that the establishment of such a clinic will be an important step toward bringing the menace of cancer under control. Until this venture has proved itself in a factual manner, the unlimited support of the undertaking by any agency cannot be expected. Given an adequate opportunity, however, I am convinced that a few "pilot plants" will not only be able to explore the province of Cancer Detection Clinics but also to prove their worth.

It may seem somewhat anomalous that a surgeon, from whom expressions might be expected concerning the benefits of his specialty to patients with gastric cancer should belabor the item of diagnosis. In contemplating the achievement of surgery in wrestling with the problem of gastric cancer—and I am certain that many share this impression—I feel that it is much as though one has been at work enthusiastically and feverishly in the back yard at a huge woodpile. When one glances up to survey what remains to be done, startled by the small proof of his efforts and at the same time noting that the sun is well past the meridian, one realizes the futility of merely whittling away at a constantly enlarging woodpile. Moreover, the better wood is at the fresher end of the pile. I would not depreciate the accomplishment of the surgeon; on the contrary, if in every phase of activity relative to gastric cancer there had been an improvement similar to that which has occurred in its surgical management, the surgeon would have far less occasion for dissatisfaction with his accomplishment.

If one reviews the progress that has been made with the problem of gastric cancer since the International Conference on Cancer was held in London in 1928, the conclusion is inescapable that the contribution of surgeons in extending the benefactions of surgery to an ever increasing number of patients constitutes the most important advance during this period, however small that gain appears to be when measured against the broad background of the entire problem of gastric cancer. Yet the distinguished Scottish surgeon, Wilkie,[46] who spoke at that conference on "Early Diagnosis and Treatment of Gastric Cancer" and who has since died of a gastric cancer diagnosed too late, said on that occasion, "The technique of the operation (for gastric cancer) has been raised to a standard which leaves little to be desired." If during the next eighteen years as important progress can be made in the early detection and recognition of gastric cancer as has been made since these words of Wilkie's were spoken, considerable acceleration of momentum will have been lent to the solution of the problem of gastric cancer.

The detection of cancers of the alimentary tract which are out of reach of the examining finger will not be easy even in Cancer Detection Clinics. But with careful interrogation of patients who appear for examination, together with hemoglobin determinations, a study of the stool for blood, an assay of the gastric juice for free hydrochloric acid, roentgen studies and gastroscopic studies in suitable cases, certainly gastric cancer will be diagnosed earlier with greater frequency than now. Moreover, such an approach to the problem of gastric cancer holds out far greater promise of improvement in the results of management of gastric cancer, for surgeons will then have an increased opportunity to make a better showing with the problem of gastric cancer.

Indifference and inertia are far more to be feared than the hazard of stirring up phobias of cancer. When the achievement of the surgeon in the treatment of cancer is better the public will fear the disease less. The relatives of patients for whose cancer I have been able to do little frequently ask how they can avoid the pitfall of seeking medical advice too late. My reply is: Go to your physician and be examined three or four times a year. To such a reply, from the wife of a patient for whom I had performed a palliative gastric resection for gastric cancer, I received a tearful letter which said in part: "I wish I could do something to awaken all doctors to the importance of the menace of cancer of the stomach. My husband saw five well-known men in this community during the past year.

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[46] Wilkie, D. P. D.: Early Diagnosis and Treatment of Gastric Cancer, International Conference on Cancer, London, Bristol, John Wright & Sons, 1928.

They examined him together with samples of his blood and urine. All of them said he was sound as a dollar. All he needed was a good rest. Not one suggested that he should have an x-ray examination of his stomach!"

The story of the insidiousness of gastric cancer is well told in this woman's letter. Only the coming of Cancer Detection Clinics, staffed by specialists in the whole range of medicine and strategically located, will reduce such occurrences to a minimum.

SUMMARY AND CONCLUSIONS

Cancer ranks only next to cardiac disease as a cause of death and takes an enormous toll of life. Approximately 150,000 persons die annually of cancer in this country, and there are probably at least 500,000 patients suffering from cancer at any one time in this country. Cancer is therefore a concern of the public health of the people of great importance.

The most frequently observed malignant growth is gastric cancer, which accounts for 25 to 40 per cent of all deaths due to cancer in countries with a population such as that of the United States, in which more than 20 per cent of the people are over 50 years of age. Cancer is statistically an important cause of death at every age, but its incidence increases significantly with advancing years. Autopsy figures suggest that in men over 20, 6 per cent of all deaths are due to gastric cancer; and in men between 50 and 70 years, 8.8 per cent of deaths are caused by gastric cancer. In women 4.3 per cent of deaths at autopsy in patients over 20 years of age are due to gastric cancer, and 5 per cent of all deaths in women between 40 and 70 years are caused by this disease.

The tragedy of the problem of gastric cancer is that too many patients come to the physician with the disease so late that surgery, the only worthwhile therapeutic agent, can hold out little hope. For the patient whose disease is local, surgical intervention promises a 20 to 25 per cent rate of cure. Inasmuch as the mortality of radical operation for gastric cancer in experienced hands is approximately 5 per cent, granted the early recognition of the disease the present gloomy prospect of gastric cancer could be much brighter.

The problem of gastric cancer is essentially one of earlier detection of patients in whom the lesion is developing. One cannot await the complete evolution of the clinical symptoms. If gastric cancer is to be diagnosed consistently in earlier stages than is done at present, patients of advancing years should be scrutinized periodically for evidences of cancer.

The establishment of Cancer Detection Clinics, staffed by specialists, affords the best promise of the early recognition of cancer. Women over 40 and men past 50 should report regularly to such clinics.

The solution of a difficult problem such as this demands the following:

1. Members of the medical profession must look at the problem realistically and learn to know all the facts bearing on it.
2. They must constantly enlarge their knowledge of the field by vigorous research and clinical investigation.
3. All available resources must be combined to lend pursuit of the inquiry the greatest promise of solution.
4. The solution of the problem must envisage an interest in the problem as it relates to the present generation as well as to those yet unborn.

The greatest hope for the present with reference to the cancer problem lies in the Cancer Detection Clinic. New discoveries as the result of a coordinated and energetic research program constitute the hope of the future.

On the occasion of the London International Conference on Cancer (1928) King George V[47] said: "I note with interest that your object is research, both into the cure and causes of cancer. No doubt in the last resort the discovery of the cause is the only certain and absolute means of cure. But I am glad that you have not ignored the practical side of the problem. Remembering the thousands of sufferers from cancer, I feel that if your discussions lead to advance in diagnosis, treatment or even palliation of the disease, this Conference will have justified itself and earned the gratitude of mankind."

Those well-chosen words of King George V spoken eighteen years ago at a general conference on cancer state the present day problem of gastric cancer very clearly. The immediate primary concern of the physician must be to strive to recognize gastric cancer earlier.

DISSEMINATED LUPUS ERYTHEMATOSUS AND DIFFUSE SCLERODERMA

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In 1942 together with Dr. Paul Klemperer we[1] employed the term "diffuse collagen disease" to indicate that in disseminated lupus erythematosus and in diffuse scleroderma, the basic morphologic changes were found in the connective tissues. Similar but less conspicuous changes in the connective tissues are observed also in rheumatic fever, periarteritis nodosa, rheumatoid arthritis, thromboangiitis obliterans and serum sickness. It must be emphasized that in each of these diseases this collagen degeneration may lead to conspicuous alterations in the walls and lumens of blood vessels, in the endocardium, pericardium and pleura, in the articular and periarticular tissues and in the dispersed connective tissues (mediastinum, retroperitoneum and subcutaneous tissues). Thus, in all the diseases of this group, one may encounter clinical evidences of vascular involvement, pericarditis, pleuritis and arthritis.

In recent years much emphasis has been placed on the fact that fibrinoid degeneration of collagen and the various vascular and visceral lesions to which it gives rise represent the "common denominator" of this group of diseases.[2] On such grounds it has been implied that the diseases are related or that they have a somewhat similar cause.

Fibrinoid degeneration of the connective tissues of the blood vessels, endocardium and synovial membranes can be induced experimentally by repeated intravenous injections of heterologous serum or of other protein or bacterial antigens.[3] From this, it has been urged that all those diseases in which fibrinoid degeneration of collagen is prominent may also be founded in allergy or para-allergy.[4] The purpose of this paper is to reconsider the clinical and pathologic manifestations of disseminated lupus erythematosus and diffuse scleroderma and to reexamine the evidence regarding their possible relationship with other "collagen diseases"[5] and more specifically with allergy.

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[47] George V.: King's Reply, International Cancer Conference, London, Bristol, John Wright & Sons, 1928.

From the Mount Sinai Hospital.

Read in a symposium on "Unusual Diseases" before the Section on Experimental Medicine and Therapeutics at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946.

[1] Klemperer, P.; Pollack, A. D., and Baehr, G.: Diffuse Collagen Disease, J. A. M. A. **119**: 331 (May 23) 1942.

[2] (*a*) Bank, B. M.: New England J. Med. **225**: 433, 1941. (*b*) Teilum, G.: Acta med. Scandinav. **123**: 126, 1946.

[3] (*a*) Gerber, I. E.: Shwartzman Phenomenon in the Kidneys of Rabbits, Arch. Path. **21**: 776 (June) 1936. (*b*) Rich, A. R.: Bull. Johns Hopkins Hosp. **71**: 123, 1942. (*c*) Rich, A. R., and Gregory, J. E.: ibid. **72**: 65, 1943; **73**: 235, 1943.

DISSEMINATED LUPUS ERYTHEMATOSUS

Clinical Features.—It is now generally agreed that the erythema on the bridge of the nose and cheeks and other areas of the skin exposed to the trauma of strong sunlight and wind is the visible but not the primary manifestation of the disease.[6] Nor is this lesion responsible for the other alterations in the viscera. In fact, the cutaneous lesions for which the disease was named almost a hundred years ago may be absent throughout the entire course or may appear only in the terminal stage or during acute exacerbations of the illness.[7] Disseminated lupus is a prolonged febrile disease of the body as a whole, which, in the absence of cutaneous manifestations, may superficially resemble rheumatic fever and rheumatoid arthritis.

If the cutaneous rash has not made its appearance, the differential diagnosis may be extremely difficult. As in rheumatic fever and rheumatoid arthritis, weakness and a prolonged irregular fever are the most characteristic symptoms. Arthralgia and even arthritis are present from time to time, but are seldom as conspicuous as in the other two diseases. Suspicion of disseminated lupus erythematosus is warranted in a young woman with a prolonged undetermined fever, with or without migrating articular pains, if there is a consistent leukopenia and if red blood cells are found in the urine. During exacerbations of the disease, pyrexia may be high and, again as in rheumatic fever, there may develop in the patient the symptoms and signs of acute pericarditis or pleuritis or even abdominal pain.

The exacerbations, like the periods of remission, occur without obvious cause. They are usually marked by the appearance of albumin and red blood cells in the urine or, oftener, by the eruption or efflorescence on the bridge of the nose of erythematous macules, which tend to coalesce and spread in butterfly pattern over the cheeks. The rash may also extend to the chin, the superciliary ridges, the pinna and the V-shaped exposed manubrial area of the chest. The erythema may have a purplish tinge. Close examination with a hand lens often reveals superficial telangiectatic capillaries and petechiae. Erythematous macules of this type are observed in some severe cases also on the tips of the fingers and the toes, around the nail bed and scattered on the palms and soles. In extreme cases, erythematous areas may appear on the shoulders, elbows, knees, over the malleoli and, in fact, on any part of the body exposed to friction.

Generally speaking, during exacerbations erythematous patches, which appear on the mucous membranes, especially of the mouth, soon lead to shallow ulcerations and shortly proceed to healing. In this disease, unlike rheumatic fever, the lymph nodes are frequently enlarged. The spleen is seldom sufficiently enlarged to be palpable. Examination of the ocular fundi often reveals perivascular hemorrhages or fluffy exudates and occasionally, during exacerbations, circumpapillary edema. These retinal changes, possible manifestations of the widespread vascular injury, sharply distinguish lupus erythematosus from rheumatic fever and rheumatoid arthritis. The presence of leukopenia is always helpful in diagnosis. It is usually associated with moderate depression of hemoglobin, red blood cells, platelets and serum albumin. During intercurrent pneumonia or other secondary infections, it may be temporarily superseded by leukocytosis. During exacerbations of the disease the Wassermann test may become falsely positive or anticomplementary. Blood cultures are negative unless there is an intercurrent or terminal infection.

In this disease, in contrast to rheumatic fever, heart murmurs and the signs of congestive heart failure are absent or inconspicuous, and such murmurs usually disappear during remissions. When heart murmurs are audible during exacerbations it is difficult to ascribe them to verrucous endocarditis, for they may as readily be due to pyrexia, to anemia or to the effect on the myocardium of a long debilitating illness.

Pericarditis revealed by a friction rub is not uncommon during periods of exacerbation. Substernal pain may in some instances be due not to pericarditis but to involvement of the connective tissue of the mediastinum. For this reason, dysphagia may be an occasional complaint. The electrocardiogram is usually normal except for low voltage, characteristic of any prolonged debilitating illness. When pericarditis occurs, the electrocardiogram may then present the characteristic changes. Dry pleurisy is frequently observed during exacerbations. More infrequently there are episodes of abdominal pain which may be due to peritoneal serositis or to involvement of the retroperitoneal connective tissues.

Usually the disease runs its course to a fatal issue after a variable period, which may be weeks, months or years. Complete or partial remissions may last for months or years. A patient now under our care in an exacerbation has had the disease for more than nine years. We have seen several patients recover completely after a long and irregular period of illness, which at times seemed as if it would end fatally. One of the worst has now been well for eight years. We do not know the cause of the disease or the reason for recovery. However, although remissions are common, permanent recovery is unusual.

The most striking characteristic of disseminated lupus erythematosus is its predominant occurrence in young women; it may also occur in childhood. In our clinical material, 95 per cent of the patients were females. The few young males having the disease presented no sexual or endocrine abnormalities.

Pathologic Features.—It is not the purpose of this paper to describe in detail those changes in the tissues which are the morphologic expression of the disease, disseminated lupus erythematosus. This we have already done elsewhere.[8] At autopsy the gross examination is often disappointing, except when one encounters the characteristic endocardial lesions of Libman and Sacks.[9] It is for the microscope to reveal the connective tissue changes in the walls of small arteries, in the renal glomeruli, the skin, the mediastinum and in the subendothelial connective tissues of the endocardium, epicardium and other serous membranes. In the affected areas there is swelling of the connective tissue ground substance and fibrinoid degeneration of the collagen fibrils. The latter become swollen, straightened and often matted together into conglomerate masses of homogeneous refractile material which is intensely eosinophilic. In the most advanced phase, the connective tissue may become completely necrotic and basophilic fragments of nuclei, cytoplasm and fibrils become set in the eosinophilic ground substance.

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[4] Fox, R A Disseminated Lupus Erythematosus Allergic Disease? Arch Path **36:** 311 (Sept) 1943 Zurbelle, E Deutsche med Wchnschr **70:** 12, 1944. Teilum [2b]

[5] (*a*) Klemperer, P , Pollack, A D , and Baehr, G : Pathology of Disseminated Lupus [illegible] Arch Path **32:** 569 (Oct) 1941. (*b*) New York State [illegible] 12, footnote 1. In these previous publications [illegible] disease of the connective tissues," and "diffuse [illegible] are, of course, only convenient formulas not to be interpreted literally. We deal not with "disease of the connective tissues" but with disease of unknown nature in which the most important structural manifestations are found in the connective tissues The modern conception of scurvy may offer a helpful analogy—a disease in which the deficiency of ascorbic acid results in failure to achieve the normal colloid state of the ground substance of the connective tissues (Wolbach, S B).

[6] (*a*) Baehr, G ; Klemperer, P , and Schifrin, A Tr. A Am Physicians **50:** 139, 1935 (*b*) Baehr, G , in Cecil, R L Textbook of Medicine, ed 6, Philadelphia, W. B Saunders Company, 1946

[7] It is important to emphasize that an erythematous blush on the bridge of the nose and cheeks in the absence of fever and other clinical evidences of a serious systemic illness is not sufficient to warrant a diagnosis of disseminated lupus erythematosus, for it may be observed in a variety of other conditions

When this fibrinoid swelling involves the basement membrane of the glomerular capillaries, the glomerular loops appear discrete and rigid, presenting what we have called a "wire loop" appearance.[6a] In other glomeruli in which the process is even more severe, the swollen collagen masses in some loops may undergo necrosis and present a superficial resemblance to embolic glomerular lesions of subacute bacterial endocarditis. When small arteries in the viscera appear necrotic, either totally or in their intimal, medial or adventitial coats, it is because the connective tissue cement substance which binds the intimal and muscular elements has suffered fibrinoid necrosis. The swollen fibrinoid ground substance may bulge into the lumen of the affected artery and, in association with desquamation and degeneration of the overlying endothelium, completely occlude the vessel. In other words, the vascular lesions in this disease occur by virtue of changes in the connective tissue substrate of the affected vessels.

Similar areas of fibrinoid degeneration in the subendothelial connective tissue of the epicardium are responsible for pericarditis; of the pleura, for pleuritis; of the peritoneum, for perisplenitis or perihepatitis. In the subendothelial connective tissue of the cardiac valves or in the endocardium of the auricles or ventricles, areas of swollen, eosinophilic altered collagen may lift up the endothelium and extrude above the surface to form coarse nodular verrucae (Libman-Sacks form of endocarditis[9]). Such vegetations on the valves or walls of the heart are to be seen macroscopically in 40 per cent of the necropsies. These verrucae are free of bacteria. One third of our cases showed a terminal bacterial infection of older verrucae, but the larger destructive lesions of bacterial endocarditis were not encountered. Aschoff bodies were not present in any of the hearts.

In the cutis, fibrinoid degeneration of the connective tissue and vascular lesions are not always prominent. However, the dilatation of capillaries and the escape of blood from them suggests a profound damage to the connective tissue matrix which supports these capillaries.

The dispersed connective tissues of the mediastinum, the retroperitoneum and the synovial tissues often exhibit fibrinoid degeneration.

Around the central arteries of the spleen, there is frequently found a collar of concentrically layered, sclerotic, connective tissue fibers. Occasionally this mantle may be so thick that it can be recognized grossly. This is the only site in which augmentation and sclerosis of the connective tissue obtains, rather than degeneration.

In addition to nonspecific hyperplasia, the lymph nodes may present small or large areas of necrosis (in the past mistaken for caseous tuberculosis).[10]

While it may be said that widespread changes in the connective tissues of the body represent the morphologic facet of disseminated lupus erythematosus and that these tissue changes frequently reveal themselves clinically as vascular lesions (e. g. cutaneous eruption, hematuria or vascular lesions of the ocular fundi), these changes are by no means uniformly observed. It must be remembered that the described changes in connective tissues are not uniform in each case. Most remarkable are the patients who die in what seems to be a profound toxic state. None of the conventional causes of death can be ascribed. There is neither cardiac nor renal failure. There is no obvious fatal cerebral disease. As a matter of fact, we have had the experience of the rejection by the Municipal Health Department of the diagnosis of disseminated lupus erythematosus written on a death certificate as the cause of death. "People do not die of lupus erythematosus." But they do. And in some of the postmortem examinations performed on these cases, but little change may be found in the viscera.

We are dealing, then, with a disease which may express itself morphologically in terms which are today recognizable only as fibrinoid degeneration of the connective tissues. This is but the structural symptom of the disease, whose essential nature is yet to be disclosed. Unfortunately, this has led to the dubious logic that since experimental hypersensitivity also produces fibrinoid degeneration of connective tissue, any disease in which fibrinoid degeneration of connective tissue is prominent must be allergic in origin.[2b]

DIFFUSE SCLERODERMA

This disease resembles disseminated lupus erythematosus in the widespread changes affecting connective tissue throughout the body. Like lupus, the cutaneous manifestations begin on the periphery, on the hands and feet, the bridge of the nose and cheeks, but they may then extend slowly and inexorably to involve all parts of the face, the extremities and even the trunk. The fingers first become stiff and the mouth puckered. The skin becomes smooth, hard and tight so that it cannot be lifted from the deeper structures, a picture that is never seen in lupus even if the condition has been present for years.

Although arthritis occurs in some early cases of diffuse scleroderma, more commonly the victims have previously been sufferers from attacks of vascular spasm in the hands, resembling Raynaud's phenomena. Low grade fever may at times be present without obvious intercurrent infection, although usually the temperature is normal. After periods of exacerbation and sometimes remission, death ensues following years of progressive debility.

The peculiar sclerosis of the skin gradually results in more or less complete immobility of the joints of the fingers, hands, maxilla and sometimes even larger joints. Partly due to the complete immobility of the hands and fingers in a claw position, but probably more because of interference with circulation through the digital arteries, the phalanges undergo extreme rarefaction, and their peripheral ends may atrophy to mere points. Meanwhile, the degenerated and fibrosed periarticular tissues of the phalangeal joints may become heavily infiltrated with lime so as to form large periarthritic tophi. Broad areas of brownish pigmentation often develop, especially on the dorsum of extremities.

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[8] Klemperer, Pollack and Baehr.[6a] Baehr, Klemperer and Schifrin.[6d]

[9] Libman, E., and Sacks, B.: A Hitherto Undescribed Form of Valvular and Mural Endocarditis, Arch. Int. Med. **33**: 701 (June) 1924.

[10] Ginzler, A. M., and Fox, T. T.: Disseminated Lupus Erythematosus, Arch. Int. Med. **65**: 26 (Jan.) 1940.

In the skin, areas of fibrinoid degeneration may be seen microscopically, but the predominant change, even from the start, is a diffuse sclerosis of the epidermal and even subcutaneous connective tissue. The similar sclerotic process in the connective tissue of the esophagus may interfere seriously with its motility.

Clinically, we can see little resemblance between diffuse scleroderma and disseminated lupus erythematosus, nor has the former the characteristic female predominance of lupus. Their resemblance is rather in the fact that both diseases involve the connective tissue of the entire body and, although sclerosis is characteristic of scleroderma from the start, fibrinoid degeneration also occurs. This fibrinoid degeneration of collagen can be observed in the walls of small arteries, as Masugi [11] first reported. The pathologic changes in the arteries, in the subendocardial and epicardial connective tissue and in the glomeruli observed in diffuse scleroderma are identical with those which we have described in disseminated lupus, including the "wire loop" lesions and focal necrosis of glomerular tufts.[12]

ALLERGY AND SERUM SICKNESS

Gerlach [13] described fibrinoid degeneration of collagen fibrils in the Arthus phenomenon, and he and others have since regarded it as an essential feature of hyperergic inflammation. This form of connective tissue alteration has been frequently observed in animals which have been sensitized by repeated intravenous injections of bacterial or heterologous serum proteins.[14] Such experimental observations have been repeated most recently by Rich [3c] who assumed that he had thereby reproduced the pathologic lesions of rheumatic fever. He also observed these lesions in serum sickness and other conditions associated with allergy.[3b] This is in line with the former theoretic conclusions of Klinge,[14] Roessle [15] and Jaeger,[16] who group rheumatic fever, periarteritis nodosa and even thromboangiitis obliterans in a common rheumatic category and regard them as different manifestations of an allergic or hyperergic state, chiefly because of the common occurrence of foci of fibrinoid degeneration in all these diseases and in experimental allergy. The most recent support for this conception comes from Teilum [2b] who has added disseminated lupus erythematosus to the rheumatic or pararheumatic group of diseases. He has assumed that all diseases with lesions showing fibrinoid degeneration are essentially of allergic character, and he has explained the different clinical and pathologic characteristics of these diseases by the theory that the connective tissue reacts somewhat differently to the various allergens.

The proponents of the allergy hypothesis are protected in their theory by the fact that the specific provocative agent is still unknown in all these diseases except thromboangiitis obliterans, which is thought to be related to tobacco smoking. However, against their hypothesis stands the fact that typical fibrinoid degeneration is commonly seen in the walls of arteries in malignant hypertension and that it can be reproduced experimentally in animals in whom arterial hypertension is induced by the Goldblatt experiment, artificial reduction in the blood supply of the kidneys. In such experiments there can be no question of allergy. Fibrinoid degeneration can also be reproduced by injection of organisms of low virulence and of chemical agents into connective tissue.[17] It may often be seen in the reacting connective tissue adjacent to a foreign body and in the base of a peptic ulcer.[18]

It must be remembered that connective tissue is the supporting and cementing framework of all the organs and tissues of the body, that it consists essentially of collagen laid down in fibrils and of a ground substance, and that it has only three basic ways of reacting to injury—by degeneration, fibrosis, cellular reaction or all three. Degeneration may be expressed as swelling of the ground substance, fibrinoid changes in the collagen fibrils and in the extreme stage as necrosis. Fibrinoid degeneration may occur in any type of connective tissue injury with or without fibrosis or cellular reaction, and in itself, as Klinge emphasized,[14] it is not specific for any one type of injury.

The occurrence of fibrinoid degeneration in the Arthus phenomenon, in serum sickness and after sensitization to bacterial or heterologous serum antigens is insufficient ground for the assumption that disseminated lupus erythematosus and diffuse scleroderma must be the result of a hyperergic state induced by an unknown agent. The hypothesis brings us no nearer to the discovery of the cause of these diseases. Furthermore, it is entirely unsupported by clinical evidence. In all our long experience with these diseases we have never encountered a lupus patient with eosinophilia, urticaria, asthma or any other clinical manifestation of allergy. This is in striking contrast to the observations in periarteritis nodosa.

PERIARTERITIS NODOSA

Clinically, there has long been little reason to doubt that many cases of periarteritis nodosa are examples of an allergic or hyperergic state, in which the pathologic effects are most conspicuously focused on the medium sized arteries.[19] Unlike disseminated lupus, the condition occurs in both sexes, with slight predominance in males. The disease is frequently preceded by attacks of urticaria, asthma or other clinical manifestations of allergy, and pronounced eosinophilia is commonly present in the acute phase. Finally, the condition can be readily reproduced in experimental animals by injections of a sensitizing antigen.[3b, c]

In periarteritis nodosa the degeneration of collagen is limited to the vessel walls, and it is always accompanied in the acute stage by a conspicuous cellular inflammatory reaction in the adventitia and media, in which the participation of eosinophils is noteworthy. We have observed perivascular infiltration of vessels in lupus erythematosus only where there was complete necrosis of an arterial wall. Although this occasional lesion may resemble periarteritis superficially, the cellular infiltrate contains no eosinophils. In lupus erythematosus the participation of vessels represents but one phase of a general involvement of the connective tissues of the entire body. On the other hand, in only 1 of our cases of periarteritis nodosa was degeneration of collagen found outside the cardiovascular system.

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[11] Masugi, M., and Ya-Shu: Virchows Arch. f. path. Anat. **302**:39, 1938.

[12] Pollack, A. D.: Visceral and Vascular Lesions in Scleroderma, Arch. Path. **29**:859 (June) 1940.

[13] Gerlach, W.: Virchows Arch. f. path. Anat. **247**:294, 1923.

[14] Klinge, F.: Ergebn. d. allg. Path. u. path. Anat. **27**:1, 1933. Klinge, F., and Vaubel, E.: Virchows Arch. f. path. Anat **281**:701, 1931

[15] Roessle, R.: Virchows Arch. f. path. Anat. **288**:780, 1933; Klin. Wchnschr. **15**:809, 1936.

[16] Jaeger, E.: Virchows Arch. f. path. Anat. **284**:526, 1932.

[17] Schosnig, F.: Virchows Arch. f. path. Anat. **286**:291, 1932.

[18] Askanazy, M.: Virchows Arch. f. path. Anat. **234**:111, 1931.

[19] Gruber, G.: Virchows Arch. f. path. Anat. **258**:441, 1925.

RHEUMATIC FEVER

In spite of the fact that fever and arthritis may at times be the only clinical manifestations of disseminated lupus erythematosus, thus making a differential diagnosis from rheumatic fever difficult, the two diseases are otherwise clinically dissimilar. Although in persons who have once had acute rheumatic cardiac disease there may sometimes develop disseminated lupus years later, we have not yet observed the simultaneous occurrence of these diseases. The leukopenia, the cutaneous and oral lesions, the retinal lesions, the clinical evidences of renal vascular injury and the almost exclusive female predominance of disseminated lupus erythematosus are not seen in rheumatic fever or in rheumatoid arthritis.

In rheumatic fever similar but much less extensive foci of fibrinoid degeneration of collagen are to be found, chiefly in perivascular spaces of the myocardium, in the subendothelial layers of the valves and only occasionally in the walls of arteries. In rheumatic fever the smaller foci of collagenous degeneration characteristically call forth a striking cellular response with the production of Aschoff bodies in the myocardium. In disseminated lupus there is little cellular proliferation in the affected areas of fibrinoid degeneration and we have never seen Aschoff bodies. If proliferating fibroblasts are encountered in the fibrinoid areas, they already exhibit striking degenerative changes. In rheumatism, especially in the cardiac valves, the proliferation of fibroblasts is progressive and almost from the beginning associated with the production of new fibrous tissue. Similarly, even in the most advanced stages of rheumatic fever, the process never affects the basement membrane of the glomerular capillaries; the wire-loop lesions and focal necrosis of glomerular loops, so characteristic of erythematous lupus, are never seen in rheumatic fever.

CONCLUSIONS

1. The connective tissues serve not only as a supporting and binding substance for all the other tissues of the body but also as the medium through which all humoral and metabolic exchange between the blood and other tissues takes place. They can react to injury in three basic ways: by fibrinoid degeneration or necrosis, by fibrillar augmentation or sclerosis, by cellular proliferation or by a combination of these changes.

2. Fibrinoid degeneration of collagen can occur both as a general or as a local expression of injury, in a variety of heterogeneous and dissimilar disease processes.

3. Fibrinoid degeneration of collagen is, therefore, not a pathologic process of sufficient specificity to serve as a reliable common denominator for the classification of disease. It certainly does not warrant the grouping of all such conditions into a common category of allergic diseases.

4. Disseminated lupus erythematosus and diffuse scleroderma have in common a similar morphologic expression; namely, fibrinoid degeneration of collagen and identical lesions of blood vessels, glomeruli, endocardium and the serous and synovial membranes. However, they are so dissimilar clinically that they seem related neither to each other nor to rheumatic fever, rheumatoid arthritis, serum sickness, periarteritis nodosa or thromboangiitis obliterans, in which similar collagen changes may occur as part of the pathologic process.

5. Acceptance of an allergic basis for these two diseases without other supporting evidence serves merely to discourage other avenues of investigation into their essential nature.

ABSTRACT OF DISCUSSION

Dr. Paul O'Leary, Rochester, Minn.: I agree with Dr. Baehr that disseminated lupus erythematosus and scleroderma do not have a common etiologic agent and that fibrinous degeneration of the collagen is an end result, not a specific pathologic reaction, and may result from the effect of various noxae in diseases that are quite dissimilar. Clinically dividing lupus erythematosus into the chronic, subacute and acute forms helps materially in prognosticating the course of the disease, because patients who have the acute type of the disease may die within a period of months. Occasionally those with the acute type may adopt the subacute form and may live for some time; in occasional cases they may assume the chronic form and remain as modified invalids for many years. It is well to repeat for emphasis a point which Dr. Baehr made, namely, that the cutaneous lesions are by no means an indication of the toxicity of the lupus erythematosus process, because even though the cutaneous lesions may be minimal the patient may die within a period of several months from disseminated lupus erythematosus. Therapeutic castration of women who have disseminated lupus erythematosus has been valueless in my experience. Also, disseminated lupus erythematosus, during its phases of activity, has never resembled scleroderma. However, I do believe the clinical picture of disseminated lupus erythematosus will frequently resemble that of dermatomyositis, in which one occasionally sees various manifestations of scleroderma. In patients with the chronic type of disseminated lupus, those who have obtained a remission, the ensuing generalized atrophy of the skin is often difficult to differentiate from the end stage of scleroderma, but otherwise I do not know of any other factor which these diseases have in common. Scleroderma with its various and sundry clinical manifestations is a symptom complex probably due to various agents. The end process of many diseases belies their etiologic basis.

Dr. George Baehr, New York: Since this is an audience of clinicians, I wish to emphasize again that the presence of a butterfly rash on the face is not sufficient evidence on which to base a diagnosis of the disease. Evidences of a constitutional illness must also be present, for an erythema at this location may be due to other causes. Furthermore, if clinicians only study patients referred to them by dermatologists, they will see only those that have the rash. If they keep in mind the fact that not infrequently the disease occurs without any rash and that throughout a long course there may be no rash until the terminal exacerbation, they will frequently recognize cases. At least one third of the patients that we have seen were observed and the disease diagnosed before the cutaneous rash appeared. A few ran their entire clinical course without a rash, and in 1 case which we studied over a prolonged period the rash was limited to the hands. On making the diagnosis of a patient without a rash, prolonged fever, decided debility, and red blood cells in the urine are evidences of the visceral lesions; leukopenia is also diagnostically significant. Vascular lesions are often visible in the ocular fundi, and they should be searched for regularly. The Wassermann test is often falsely positive, and it may fluctuate from negative to falsely positive and back again. Coburn and Moore thought this was due to the rise in euglobulin, but I doubt whether this can be the explanation, in view of its fluctuating variability. It has nothing to do with syphilis. Dr. O'Leary has reemphasized the importance of the sex predisposition. As I stated, more than 95 per cent of our patients were women. It has not been our experience that treatment with testosterone propionate or castration in females materially altered the course of the disease. Exacerbations and remissions in this disease are so common that it is difficult to draw any conclusions as to the result of such therapy. It is our impression that they have not been successful. We cannot ascribe the remissions that we have observed, sometimes long remissions over many years, to the use of extremely large dosages of testosterone propionate or radiologic castration. Similarly, there are no endocrine disorders to be observed in women, no menstrual disorders, although as a result of increasing debility or secondary anemia amenorrhea may develop symptomatically. Also, in men we have seen no evidence of endocrine disorder. We are obliged to conclude that the female predominance merely represents a sex predisposition and is not the essential factor. It is perhaps equivalent to the male redisposition for thrombo-angiitis obliterans.

Clinical Notes, Suggestions and New Instruments

RECTAL COMPLICATIONS OF EPISIOTOMY

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In the past year or two we have treated 3 patients who had ctal complications manifested soon after episiotomy. Two of ie patients had typical fistulae in ano, and the third had rectal iin but no definite fistula. A brief summary of their histories ill be given later.

Although rectal complications of episiotomy seem of minor importance, they are extremely annoying and are of great concern, especially since they follow the ordeal of childbirth.

An attempt was made to review the literature on the subject, but apparently little has been written, since only one such article was indexed at the Surgeon General's library. That article was by Dr. J. J. Corbett,[1] who in 1938 reported 6 cases of rectal fistulas which developed after episiotomy. Because of the paucity of reports, in spite of the fact that these complications are not uncommon, we will attempt to outline briefly the most probable causes and the treatment of these complications.

Undoubtedly, episiotomy has been a definite advance in that it prevents rectal injuries due to extensive lacerations of the perineum; however, the operation itself may cause certain rectal disorders such as perianal abscess, fistula in ano, rectovaginal fistula and painful scars.

ETIOLOGY

Most of the complications follow infection of the episiotomy wound. In a study of 2,987 consecutive episiotomies, Kretzschmar and Huber[2] stated that infections occurred in 2.5 per cent when silkworm-gut was used and in 1.3 per cent when catgut was used. Pain develops a few days after the operation; this is followed by redness, edema and tenderness of the wound, which eventually ruptures and drains frank pus, usually through the episiotomy scar. This relieves the symptoms but is followed by a persistent opening which closes and reopens at intervals. Subsequent abscesses may also occur. How does this infection start? A satisfactory explanation is that while the episiotomy wound is being sutured, a suture is inadvertently passed too deeply. It pierces the rectal wall, goes through the mucosa and then passes back through the episiotomy wound, carrying the rectal flora with it. Thus the needle hole itself can be the future internal opening of the fistula in the rectum, and the external opening will either be one of the external needle openings or be present in the center of the episiotomy scar. This complication can be avoided by keeping a gloved finger in the rectum when placing the deep sutures or by doing a rectal palpation after placing the sutures. If the latter is done and a suture is palpated in the rectum, the suture should be cut in the episiotomy wound and withdrawn through the rectum. If the suture is drawn out through the wound itself it will contaminate the area by dragging the rectal portion into the open wound, thus inoculating it with pathogenic organisms.

Rectovaginal fistulas may develop after infection of the episiotomy wound. In this condition a tract extends between the rectum and the vaginal mucous membrane, in contrast to fistulae in ano, in which the tract extends from the rectum to the perianal skin.

TREATMENT

When tenderness and edema of the episiotomy scar are present and infection has started, hot applications are exceedingly helpful in the relief of pain and in the localization of the abscess. Often the wound ruptures of its own accord. Early incision through the scar will prevent burrowing of the pus and greater involvement. Occasionally there may be a low grade infection, and the wound may heal without the formation of a fistula.

In the performance of an incision and drainage for abscess, it would seem advisable to identify and treat the fistula at the same time. However, the tissues are usually edematous and the internal opening is usually sealed off, so that its identification is difficult and the procedure is not practical. After a few days, when the edema subsides and the pus is evacuated, the internal opening can be felt in the rectum just above the sphincter as a tiny hardened pea-sized area. To cure the fistula the internal and external openings should be connected by passing a soft probe gently through the external opening into the rectum and incising boldly down to the probe. This lays the tract wide open and allows it to heal over by granulation. It is not necessary to excise the tract itself. To prevent the incontinence due to complete division of the sphincter, a seton can be threaded around the sphincter and through the internal opening, then tied and left intact. At a later date, after some healing has occurred by granulation, the sphincter should be divided with the patient under local anesthesia, freeing the seton. This can be done in the office without greatly incapacitating the patient. Postoperatively, in addition to the routine of sitz baths, it is most important to see the patient frequently enough to do digital rectal dilatations in order to prevent too rapid bridging of the defect, which may result in the formation of closed-off areas which can subsequently abscess.

REPORT OF CASES

Case 1.—Mrs. H. R., a white woman aged 22, was first seen two months post partum. She was a primipara who had a thirty hour labor and an episiotomy. Three days post partum the patient began to have severe pain in the region of the rectum; this persisted for two weeks. An abscess formed in the peritoneum and was opened. The pain continued intermittently. At the time of examination the patient complained of pus and fecal drainage from the perineal region. Examination revealed two small pinpoint openings, which were about 1 cm. apart and just to the right of the episiotomy scar. An excision of the fistula in ano was performed. The two openings were connected, and then a probe was passed into the rectum and an incision was made to connect the internal and external openings. The patient had a normal convalescence, and the wound healed without discomfort.

Case 2.—Mrs. M. Y., a white woman aged 31, was seen six months post partum, having had a normal delivery and an episiotomy. The patient complained of some tenderness in the region of the episiotomy for several weeks. She had noticed some pus draining from the perineal region. Examination revealed a tiny furuncle-like area on the left side of the perineum. When this was opened a probe was easily passed along a sinus tract into the rectum. With the patient under local anesthesia, an incision was made down to the muscle and a seton was placed through the internal opening around the sphincter. Twenty days later the seton was removed with the patient under local anesthesia after the tract had been cut through. Recovery was uneventful.

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[1] Corbett, J. J.: Rectal Fistula Complicating Episiotomy, Harper Hosp. Bull. 1: 7-9 (Oct.) 1941.

[2] Kretzschmar, N. R., and Huber, C. P.: Study of 2,987 Consecutive Episiotomies, Am. J. Obst. & Gynec. 35: 621-626 (April) 1938.

CASE 3.—Mrs. C. W., a white woman aged 19, was seen five weeks post partum, having had a high forceps delivery and an episiotomy. The patient complained of severe pain in the rectum since the birth of her baby. Examination revealed that the perineal wound was entirely healed. There was no evidence of inflammation or tenderness. No fistula was present. On examination of the rectum two pea-sized areas were palpated on the left side in line with the episiotomy. The patient was high strung, and it was difficult to evaluate her complaint of rectal pain. The two tiny pea-sized areas in the rectum probably represented a place where a suture went through and healed by the formation of scar tissue but did not form an abscess with subsequent fistula. As the scar was well healed it did not seem justifiable to excise the scar or the indurated areas in the rectum. At present the patient does not complain strongly, but she still speaks of some discomfort in the region of the rectum.

CONCLUSION

Perianal abscesses with resultant fistulas do occur in a small number of cases following episiotomy. Such a sequela should be kept in mind.

EXCESSIVE SELF MEDICATION WITH NAPHAZOLINE HYDROCHLORIDE ("PRIVINE HYDROCHLORIDE")

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Rhinitis medicamentosa is a condition frequently associated with allergy or sinusitis. Recently, however, there have been an increasing number of unusually severe cases associated with nervous manifestations following excessive self medication with naphazoline hydrochloride ("privine hydrochloride" N. N. R.).

REPORT OF CASES

CASE 1.—A healthy man aged 28, who had been well until four months before, began using "solution privine hydrochloride 0.1 per cent" for a cold at the recommendation of a friend. His stuffiness became worse until he was using about 2 ounces (59 cc.) a week. He had lost 20 pounds (9.1 Kg.), was unable to sleep and was so nervous that he thought he was having a breakdown. Examination of the nose showed the turbinates to be grossly swollen; they were the dead gray color and the consistency of bubble gum. They could not be shrunk even by a mixture of cocaine hydrochloride and epinephrine ("adrenalin" N. N. R.). The sinuses were clear to transillumination, the sedimentation rate was normal and nasal smears did not suggest allergy. Results of physical examination and extensive laboratory examination were otherwise within normal limits. The patient was put on a regimen of sedatives, steam inhalations and ephedrine by mouth. After a stormy ten days he began to improve. One month later he reported that he was taking no medicaments and was gaining weight; his nervousness was gone. The nose looked normal.

CASE 2.—A child aged 3 years had increasing stuffiness of the nose following a cold six weeks before. During the previous week the mother had become alarmed by a nervous twitching and an impediment in speech. The mother stated that she was using "privine" full strength "by the gallon" (a prescription of her own) and that the child cried for it. There was no warning note on the bottle. All medicaments except a dilute solution of sodium chloride were discontinued. At the end of a week both the nose and the nervousness were improved.

CASE 3.—A young woman with mild chronic allergic rhinitis stated that she could not live without "privine" and used it every two hours. Her nasal tissues completely blocked the air passages and showed the dead gray color of rhinitis medicamentosa due to this drug. She was extremely nervous, had lost 8 pounds (3.6 Kg.) and for the past month had not been able to sleep without the use of sedatives. The blood pressure was 120 systolic and 80 diastolic. Medication with naphazoline hydrochloride was discontinued, but sedatives were given. Three days later the patient collapsed; the blood pressure was 85 systolic and 50 diastolic. At her insistence naphazoline hydrochloride was started again, and withdrawal of the drug is being attempted gradually.

COMMENT

These cases are not exceptional, but are characteristic of those which many rhinologists and allergists are seeing daily. Pharmacists report the impression that self medication with this agent is excessive and is increasing rapidly.

Differential diagnosis between sinusitis, allergic rhinitis or nasal psychoneurosis, with which it may be associated, is essential because the patient, as in most cases of rhinitis medicamentosa, will insist that the drug is his only help and will seldom recognize the true cause of his condition. Continuation or increase of his use of the medicament will eventually result in severer manifestations of disease.

Treatment consists in the withdrawal of the nasal medicament as rapidly as is consistent with the patient's health and will result in a cure comparable to the previous condition of the nose in from a week to three weeks. Sedatives, steam inhalations and mild protein silver ("argyrol") packs only ameliorate the severe discomfort of the first few days. I have found that other types of nose drops will not give relief and only seem to hinder the healing. Antihistaminic agents and sulfonamide compounds have usually been given to the patients previously by friends. These drugs are of no benefit except for complications. The administration of ephedrine by mouth often increases the nervousness of the patient.

The purpose of this report is not to condemn the ethical use of an excellent product but simply to warn that its uncontrolled abuse may result in serious disease, which can be diagnosed early if it is considered.

SUMMARY

1. Rhinitis from excessive self medication by naphazoline hydrochloride ("privine hydrochloride") is a rapidly increasing entity in allergic and nasal practice.

2. It produces a severe gray rhinitis of a most refractory nature with a severer form of nervousness than one would expect to result from nasal obstruction alone.

3. It is easily diagnosed by history and examination but must be distinguished from its complications.

4. Treatment, which consists in withdrawal of the medicament, will result in cure but is uncomfortable.

32 Clayton Street.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, *Secretary.*

GENERAL ELECTRIC INFRA-RED HEAT LAMPS ACCEPTABLE

Manufacturer: General Electric Company, Cleveland 12.

The General Electric Infra-Red Heat Lamps are self contained units and screw into any conventional socket. The conical bulb is coated with aluminum on the inside, making a reflector. The face of one model is made of lightly frosted glass and the other is red glass. The heat radiation from this lamp has therapeutic value, but the firm does not claim any special therapeutic benefit from the frosted or red glass faces (filters). The tungsten filament at the focus of the reflector draws 250 watts. The spectral intensity measurements presented by the company are characteristic of the radiation emitted by any incandescent tungsten. The Council has confirmed these data.

The generators, in the opinion of the Council, may be employed efficaciously whenever radiant heat is indicated. They may be prescribed by a physician for use in the home.

The Council on Physical Medicine voted to include the General Electric Infra-Red Heat Lamps in its list of accepted devices.

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SATURDAY, AUGUST 2, 1947

NEW CONCEPTS IN THE TREATMENT OF RELAPSING MALARIA

The prevention of relapses in malaria remains largely an unsolved problem despite the development of new and more potent antimalarial drugs. The probability of radical cure in an individual, or of cures in a group, Sapero[1] believes is determined by the factor of drug efficacy plus the factor of host immunity. The net effect of these is reduced or augmented by a third factor, the inherent characteristics of the species or strains of malaria concerned. Thus the attainment of radical cure either in an individual or the percentage of such cures in any group is not solely a matter of exact therapeutic method, as is commonly believed.

The variability of immune response is demonstrated by the fact that some persons who acquire malarial infection may experience complete cure without the benefit of drug therapy, while others fail to attain a radical cure despite the curative effects of both treatment and immune response. In this group fall the cases of relapsing malaria.

The four species of plasmodia which cause human malaria have distinctive qualities. Individual species of plasmodia and certain individual strains of a single species show inherent differences in their pattern of relapse in the human host and in their susceptibility to drugs. Plasmodium ovale, for example, is distinctive in that infections caused by it show little tendency to relapse and exhibit a high degree of drug susceptibility. Remarkably small doses of quinine usually suffice to bring about radical cure. Plasmodium vivax infections, in contrast to those caused by Plasmodium ovale, exhibit a strong tendency to relapse. The usual course in vivax infections is that shortly after recovery from the primary attack a series of relapses takes place. Then there follows a period of clinical latency. Usually this lasts from seven to eleven months, after which another series of relapses may occur. These distinctive qualities are exhibited not only by the species but also by certain individual strains of P. vivax, which also vary in their response to treatment. These characteristics of species and strains appear to be of a remarkably stable nature.

Most workers in this field, Sapero points out, explain the mechanism by which distinctive relapse patterns are exhibited by various species and strains of plasmodia by accepting a hypothetical principle which postulates the existence of an exoerythrocytic cycle in man. Thus relapses in malarial infections are said to be of two types: those which follow as a result of parasitic activity in the exoerythrocytic cycle and those which follow from renewed parasitic activity in the conventional erythrocytic cycle. A new version of parasitic activity in man is that, following inoculation, sporozoites enter fixed tissue cells, where the parasites are believed to undergo a distinct cycle of development, a so-called exoerythrocytic cycle; subsequently they are discharged into the blood stream and there begin the erythrocytic cycle. Persistence of infection and relapse are both closely linked with the exoerythrocytic development of parasites. Relapses are conceived to follow periodic discharges of tissue forms into the blood stream.

Chemotherapeutic agents in general use in malaria exhibit a highly selective action. Drugs capable of eradicating trophozoites of the erythrocytic cycle are incapable of a like action on preerythrocytic forms. Conversely, drugs potent against preerythrocytic parasites are largely without effect on erythrocytic forms. Quinine, quinacrine and chloroquine, as far as practical benefit against asexual forms is concerned, are active only on erythrocytic forms. Plasmochin and pentaquine act exclusively on exoerythrocytic forms. The newer approach demands that therapy be directed toward the prevention of the exoerythrocytic type of relapse as well as toward the erythrocytic type. Either a single drug must be discovered which has the dual capacity of acting against the parasites of both exoerythrocytic and erythrocytic phases, or a combination of two drugs which will accomplish the same result must be used. Paludrine appears unique, since it represents the first discovery of a drug which has appreciable dual activity against both erythrocytic and exoerythrocytic forms. Some success has been achieved by the simultaneous use of combining quinine with plasmoquine or pentaquine. This combination provides an attack on forms of both cycles.

Sapero concludes that the problem of preventing relapses depends much on the understanding of the possibility of an exoerythrocytic cycle in man and of the two types of reactivation: the exoerythrocytic relapse and the erythrocytic recrudescences. Radical cure of the infection involves the use of drugs capable of both exoerythrocytic and erythrocytic activity. Drug susceptibility and the pattern of relapse appear to be the essential elements peculiar to species or strains of species which are important in determining whether cure or clinical reactivity will follow.

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INFLUENZA VACCINES

Less than thirty years ago more than 21,000,000 people throughout the world died of a pandemic disease the cause of which at that time was unknown. Human influenza virus was discovered by Smith, Andrewes and Laidlaw[1] in 1933. The possibility of a major epidemic during World War II led to experiments on producing, on a large scale, a vaccine which would protect our armed forces and civilians against influenza. The first vaccine prepared on a large scale contained inactivated influenza virus obtained by the elution of adsorbed virus from chick red cells.[2] This vaccine produced protection against influenza, but it contained about 80 per cent of impurities in the form of nonvirus protein materials. The second vaccine produced on a large scale was prepared by the selective removal of inactivated virus from the extraembryonic fluids of the infected chick embryo by high speed centrifugation.[3] This method yielded a vaccine containing few impurities and consisting almost wholly of purified inactivated virus. The centrifuge method was accepted by the U. S. Army in April 1945 as an alternative for the adsorption and elution method used during the preceding year. The Army was vaccinated against influenza in the fall of 1945, and where comparative results were obtained they indicated that influenza among the vaccinated was very much less prevalent than it was among the nonvaccinated.[4]

In the meantime two additional influenza vaccines have appeared on the market, one consisting of inactivated virus precipitated on calcium phosphate[5] and the other of inactivated virus precipitated on protamine.[6] Four different influenza vaccines are available therefore at present, all prepared from the extraembryonic fluids of infected chick embryos and containing both type A and type B influenza viruses inactivated with solution of formaldehyde. The fluids however are processed by different methods and yield vaccines which differ in their content of impurities or nonvirus materials. The centrifuge method, Stanley[3] found, yields the purest product, and in addition the yield and the possible concentration of virus are greater.

In a study of allergic reactions produced in children by the eluate-type influenza vaccine, Ratner and Untracht[7] found that the positive reactions were related in large measure to the egg protein in the vaccine. A few of the suggestive reactors were shown to be sensitive to the solution of formaldehyde and not to egg. It was suggested that vaccines produced from chick embryos should not be given to persons who are highly sensitive to egg protein. They recommended that all persons be tested intradermally with 0.02 cc. of undiluted vaccine before the administration of each prophylactic dose of vaccine. Although its occurrence is rare, profound or fatal anaphylaxis has resulted from the use of influenza vaccine in untested patients. With respect to potential allergic reactions the centrifuge-type vaccine has definite advantages over the other three types. The reactions produced by the centrifuge-type vaccine in a highly egg-sensitive person were found to be far less than those produced by the eluate-type of influenza vaccine.[8] It seems obvious therefore that the most highly purified vaccine, the centrifuge-type, should be used whenever possible. Its manufacture and sale to civilians are not restricted by patents.

Current Comment

FATIGUE AND SWEATING

The maintenance of efficiency under conditions of high temperature and humidity is dependent on the ability to maintain the rate of sweating. The factors which control the rate of perspiration have been studied by Gerking and Robinson,[1] who caused experimental subjects to do a constant amount of work on a treadmill under controlled conditions of temperature and humidity. If the initial rate of sweating was moderate, 600 to 800 Gm. per hour, it was maintained for a long period. If, however, the initial rate was about 1,400 Gm. per hour, the sweating rate declined from 10 to 80 per cent by the sixth hour of the experiment. The decline in sweating rate was greater in humid than in dry heat and also greater when men wore army tropical uniforms than when they wore only shorts. Water balance was maintained by ingestion of 0.1 per cent sodium chloride solution. The decline of the rate of sweating is probably due to some sort of fatigue of the sweating process. It results in failure of the cooling mechanism and a rise of body temperature of about 2 degrees centigrade.[2] The sodium chloride content of the sweat becomes greater (more like the plasma) as work is prolonged. Best performance is achieved by replacing hour by hour the water lost in the sweat. Replacement of salt or of glucose on an hour by hour basis is of little advantage compared with water replacement.[3]

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CANCER OF THE LUNGS IN PULMONARY TUBERCULOSIS

Tuberculosis and cancer may occur in the lungs at the same time. The number of such cases appears to be increasing. Several cases in which simultaneous tuberculosis and cancer of the lungs were diagnosed during life have been analyzed by Gerstl, Warring and Howlett.[1] They state that the cancer may escape detection because tuberculosis alone can cause the prominent symptoms and signs. Any failure to conform to the pattern of uncomplicated tuberculosis should lead to prompt investigation. In their cases x-ray evidence of major bronchial obstruction or of a relatively circumscribed solid mass led to more precise diagnostic procedures, such as bronchoscopy, biopsy of suspected metastatic lesions, study of cell blocks of sputum and pleural sediment and puncture biopsy. None of the cases described were considered operable, but the complete diagnosis resulted in a more definite prognosis and in better management. The best treatment requires a correct and complete diagnosis as early as possible. "Since pulmonary resection is now feasible in many cases of tuberculosis, the practical desirability of much earlier diagnosis of coexisting cancer is apparent. It is, perhaps, not too much to hope that diagnosis of cancer in an operative stage may occasionally be accomplished in spite of the added difficulty which exists when tuberculosis is also present."[1] Cancer should be suspected regularly in pulmonary tuberculosis in the older age group. The differentiation between certain tuberculous and cancerous pulmonary lesions, whether concurrent in the same case or unmixed, requires special efforts. Siltzbach[2] points out that mass chest surveys with x-rays may reveal unsuspected silent cancer of the lung, especially in the upper lobes of persons over 40. He reports 2 such cases treated for tuberculosis seven and sixteen months before the correct diagnosis was made.

STATE OF VITAMIN A IN MILK

Both the food pigment carotene and vitamin A itself contribute to the vitamin A potency of milk fat. This potency is supplied to a considerable degree by carotene in the milk fat of the Jersey and Guernsey breeds,[1] whereas vitamin A itself is more important in this respect in the Holstein and Ayrshire breeds. A recent study[2] has described further the nature of the vitamin A in bovine milk and colostrum. This food factor, being an alcohol, can exist either free or esterified with a fatty acid. By chromatographic analysis it was shown that 98 per cent of the vitamin A in both colostrum and milk is in the esterified form in all of the breeds studied—Guernsey, Jersey, Holstein and Ayrshire. This is interesting in view of the fact that the major part of the vitamin A in the blood of the same cows was in the alcohol form. Whereas the chemical character of the vitamin A was identical in both colostrum and milk, the same study demonstrated that the yellow carotenoid pigment consisted more largely of carotene in colostrum (95 per cent) than in milk (89 per cent).

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THE MOTIVATIONS OF CUSTER'S LAST STAND

The ship *Swanton* arrived in New Orleans on Dec. 11, 1848 with some 280 steerage passengers, 16 of whom died of cholera during the passage. The packet boats plying the Mississippi River spread the infection with great rapidity to Memphis, St. Louis, Nashville, Wheeling and Pittsburgh. The epidemic subsided during the winter, to flare up in the spring in true epidemic form. This was the sequence for almost three decades. In 1867 cholera broke out at Fort Riley. George Armstrong Custer, at that time a young officer with a brilliant record, a major general at the age of 27, a lieutenant colonel in charge of a cavalry regiment on completion of the Union War, left his field of duty and returned to Fort Riley, having turned over the command of the regiment to the next senior officer. This was done without permission, because the young officer feared for the safety of Mrs. Custer, who then lived at Fort Riley. For this violation of the Articles of War, charges were preferred and court martial procedure was instituted. One year later Custer was charged with abandoning Major Elliott and his detachment while the latter was making a flanking attack under orders. The court martial convicted Custer and sentenced him to loss of rank and pay for one year. On the completion of his sentence Custer rejoined his regiment no longer the favorite of his superiors, no longer the "boy general." He was, in fact, a humiliated man, a victim of persecution, nurturing rancor in his heart and a desire to reestablish himself despite his petty persecutors. Dr. Paul R. Hawley[1] believes this desire to reestablish himself as a great military hero led to the final erratic conduct which culminated in the utter defeat by the Indians of Custer and his command and his own destruction. Menninger[2] says that Custer was psychopathologic, characterized by excessive vanity and disregard for the feelings or safety of others, a lack of loyalty either to cause or to friends, disregard of the principles of humanity or the established code of ethics, and at times a conspicuousness of achievement passing for success under circumstances in which ruthlessness and boldness are to some advantage. Menninger further points out that when such types were encountered among the enlisted men in World War II they were unceremoniously "boarded out on section VIII," which meant that they were dismissed from service because of inaptitude. In the case of officers of high rank this procedure could not be applied with the same ease and dispatch. This explains certain disastrous results, as far as the morale and even the lives of the men in charge of an incompetent leader are concerned.

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ORGANIZATION SECTION

Council on Medical Service

HEALTH CENTERS UNDER THE HOSPITAL CONSTRUCTION ACT

Prepared for the Council on Medical Service by Dr. Dean F. Smiley,
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Education, American Medical Association
Chicago

The first health center in the United States was established in 1912 in Philadelphia as a child health center. Since 1912 health centers of various types have been rapidly developed, and it is estimated there are now at least 150 in operation.

As one would expect from the title, most health centers have been primarily concerned with health promotion. Other functions have, however, been combined with health promotion to produce not only public health centers but also health and welfare centers, health and recreation centers, hospital health centers and public health and medical service centers.

PUBLIC HEALTH CENTERS

Typical of the public health centers are the district health centers, district substations, child health stations, health centers with borough offices, health and teaching centers of New York, Boston, Baltimore and other large cities and the county public health centers of Missouri, Tennessee, Alabama and other states.

In these public health centers, facilities are provided for all or part of the following activities: communicable disease control and immunization services, sanitation services, maternal, infant and child hygiene services, public health laboratory service, vital statistics and health education.[1] Particularly stressed are the preventive medical services (examining and advising) and the health educational services.

In localities where the medical care of the indigent and medically indigent are an administrative responsibility of the public health department, ambulatory clinic facilities are sometimes provided as in Topeka, Kan.,[2] and certain counties in Missouri, as a part of the public health center. Even if this is the case, the functions of the health center are still primarily preventive rather than curative. In Topeka, Kan., the staff for the health center clinic is provided by the local medical society operating under a voluntary, prepaid medical care insurance scheme by which Shawnee County prepays the medical care of its indigent and medically indigent families at a flat rate of $4 a month per family.

HEALTH AND WELFARE CENTERS

About 1935 Los Angeles experimented with the idea of combining health and welfare functions in its health centers.[3] Under the leadership of Dr. John Pomeroy, Los Angeles County attempted to provide diagnosis and treatment of indigent outpatients in its health centers, the practicing physicians of the county donating their services in these centers. The welfare functions were however eventually abandoned, and these centers are now operating as public health centers.[4]

Examples of health and welfare centers operated by private agencies are found in the eight health centers operated in Monmouth County, N. J., by the Monmouth County Organization for Social Service, Incorporated. In the thirty-five years since its inception in 1911, this organization has grown until it now employs thirty-one public health nurses and supervisors and includes eight rural health centers, six lay auxiliaries and a social service exchange carrying nearly 60,000 case histories.[5]

Since welfare agencies serve only a limited clientele, while public health agencies are concerned with the health of all citizens, it is obvious that close association with welfare agencies would be apt to limit rather than enhance and expand the activities of the public health agencies.

HEALTH AND RECREATION CENTERS

In 1938 Dr. Frank K. Safford Jr. submitted three models which he had developed over the preceding four years. All were for health centers for preventive medicine, recreation and education;[6] the first for a large slum clearance housing project, the second for an American city of 100,000 population, the third for a city of 35,000 population.

The plan, in the words of the designer, would be as follows: "The recreation is designed to attract people to join the center as members, paying a yearly membership fee. Then membership privileges would include free use of athletic facilities, the service of the diagnostic clinic and reduced rates in the eating places, theater, medical baths and educational facilities. In the diagnostic clinic, members of the center would receive physical examination, including routine x-rays, urine and blood tests, periodic consultations, instruction in preventive medicine, including advice about exercise, recreation and diet. The medical work would be carried on by a visiting staff of physicians who would devote so many hours weekly in the center clinic just as they do in other hospital clinics, with the difference that in the center (supported by recreation and membership) they would be paid for their services. . . ."

As far as is known, none of these projected centers have as yet been built in the United States, though the Pioneer Health Center of this type in Peckham, London, has been in operation for years.

HOSPITAL HEALTH CENTERS

For the past ten years the W. K. Kellogg Foundation at Battle Creek, Mich., has been interested in developing hospitals in seven of Michigan's rural counties as rural hospital-health centers.[7] The units are primarily efficient rural hospitals, but they have been given the title of health center because they provide, in addition to hospital services, home maternity nursing service, complete home laboratory service and, in one center, home x-ray service. The laboratory and x-ray facilities of each hospital are made available at low cost to the practicing physicians of the surrounding area. Though public health offices have not yet been established in any of these hospitals, such a combination is contemplated, and in one of the experimental counties the county health officer is at the same time superintendent of the county hospital, the Branch County Community Health Center.[8]

A short description of the hospital health centers was published in 1940.[1b]

PUBLIC HEALTH AND MEDICAL SERVICE CENTERS

In 1946 there appeared at least three recommendations for the construction in rural communities too small to support a 50 bed general hospital of health centers to include a limited number of beds for medical, surgical and maternity cases. The first of these recommendations[9] called for 5,500 to 6,000 square feet of floor space for the 10 bed hospital features, 2,000 square feet for the public health activities and 300 square feet for each private physician's and dentist's offices and examining rooms.

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[1] Typical plans for public health centers of this type have been published as follows: (*a*) Public Health Centers Architectural Records Building Types Study No. 67, Architectural Record, 119 W. 40th Street, New York 18, July 1942. (*b*) Health Centers: Building Types. Reference Study. Reprinted from the Building Types Section of the Architectural Record, 1940. (*c*) You Can Have One. What Are County Health Units? State of Missouri Division of Health, Jefferson City, Mo.

[2] (*a*) Callahan, R. W.: Shawnee County Medical Service Plan for the Medically Indigent, J. M. Soc. County of New York, July 1943. (*b*) Survey of Some Major Health Facilities in Topeka City and Shawnee County, Kansas, May 1945. (*c*) Manual of Indigent Medical Care and Unit Fee Schedule, Shawnee County Medical Society, Topeka, Kan., June 1, 1946. (*d*) Unified Health and Welfare Centers.[3]

[3] Unified Health and Welfare Centers of Los Angeles County, Calif., Architectural Record, June 1935, pp. 445-449.

[4] Statement based on information given in personal conference with S. K. Cochems, executive secretary, Los Angeles County Medical Society, Feb. 17, 1947.

[5] For Our County's Health and Welfare, Monmouth County Organization for Sociay Service, Incorporated, 131 Pearl Street, Red Bank, N. J., 1946.

[6] Safford, F. K., Jr.: Health Centers for Preventive Medicine, Recreation and Education: Design Trends, Architectural Record, February 1938.

[7] There are ten of these hospitals in seven rural counties of Michigan as follows: Sheldon Memorial Hospital, Albion, Calhoun County; Allegan Health Center, Allegan, Allegan County; Haynes-Green County Memorial Hospital, Charlotte, Eaton County; Calhoun County Public Hospital, Battle Creek, Calhoun County; Community Health Center, Coldwater, Branch County; Pennock Hospital, Hastings, Barry County; Hillsdale Community Health Center, Hillsdale, Hillsdale County; Oaklawn Hospital, Marshall, Calhoun County; William Crispe Hospital, Plainwell, Allegan County; City Hospital, South Haven, Van Buren County.

[8] Information gained in personal conference with Mr. Graham Davis, director, Division of Hospitals, W. K. Kellogg Foundation, Battle Creek, Mich., Feb. 22, 1947.

The second[10] and third[11] recommendations in almost identical words called for public health and medical service centers "in outpost areas at present without hospital facilities." The six functions of these centers would be:

1. To serve as the local point about which public and voluntary agencies can coordinate their efforts to conduct a program of health education.

2. To serve as the headquarters for the official public health agency with offices for health officer, sanitarian and public health nurses. To "be the base for programs in sanitation and preventive medicine, such as immunization against preventable diseases, the early diagnosis of tuberculosis, control and treatment of venereal diseases, and maternal and infant care activities."

3. To make provision for the conduct of routine laboratory tests and x ray services. "It is contemplated that the physician himself or a nurse trained in the technics of the more commonly used diagnostic tests and examinations would operate these facilities In some instances, trained technicians could be employed"

4. Provisions of office facilities for the physician or physicians who are residents in the community.

5. "The provision of a few beds and proper sterilization and delivery room facilities in the public health and medical service center for the care of normal obstetric cases would be highly desirable."

6 "Some effort should be made to provide temporary facilities for treating emergency cases until suitable arrangements can be completed for transfer of the patient to a general hospital with a thoroughly competent professional service. A definite working arrangement should be formulated for affiliation between public health and medical service centers and a conveniently located general hospital."

HEALTH CENTERS DEFINED BY GOVERNMENTAL AGENCIES

The Hospital Survey and Construction Act of 1946[12] in section 631f states that "the term 'public health center' means a publicly owned facility for the provision of public health services including related facilities such as laboratories, clinics and administrative offices operated in connection with public health centers; . . ."

The Federal Register Document 47-1247;[13] filed Feb 11, 1947, provides the following definitions as a part of the Public Health Service Regulations issued pursuant to the provisions of section 622 of the Public Health Service Act as amended by the Hospital Survey and Construction Act of 1946 (Public Law 725, 79th Congress):

Section 10 1 (p) *Public health center* A publicly owned facility utilized by a local health unit for the provision of public health services, including related facilities such as laboratories, clinics and administrative offices operated in connection with public health centers.

Section 10.1 (q) *Local health unit* A single county, city, county city or local district health unit, as well as a state health district unit where the primary function of the state district unit is the direct provision of public health services to the population under its jurisdiction

Section 10 1 (r) *Public health services.* Services provided through organized community effort in the endeavor to prevent disease, prolong life and maintain a high degree of physical and mental efficiency. In addition to the services which the community already provides as a matter of practice, the term shall include such additional services as the community from time to time may deem it desirable to provide

TYPES OF HEALTH CENTERS TO BE CONSIDERED

Type 1 would offer five public health services only. It would be very simple and not house any full time staff. The facilities would be in use only when public health workers from the county unit were present or public health clinics were being conducted by local physicians temporarily employed by the health department.

Type 2 would offer the five public health services and in addition limited public health laboratory services and limited clinical laboratory services. The full time services of a medical technologist would probably be required. Reports of tests would be submitted to the patient's physician not to the patient.

Type 3 would offer the five public health services and the three diagnostic services, i. e. public health laboratory, clinical laboratory and x-ray laboratory services.[10] It would require the full time services of a medical technologist trained also as an x-ray technician. Films and reports would be sent to the patient's physician, not to the patient.

Type 4 besides the five public health services and three diagnostic services would provide the practicing physicians of the community the use of office space close to the diagnostic facilities.

Type 5 would add emergency medical service and maternity service. This would require twenty-four hour service, 1 to 4 beds, kitchen and possibly laundry service.

Type 6 would add a 10 bed hospital with 5,500 or 6,000 square feet of floor space devoted to beds and adjunct services. Probably a minimum of 10 to 15 full time employees would be required for the hospital facilities alone.[9]

Type 7 would add offices for social and welfare workers and *possibly clinic facilities for the medical and surgical care of the indigent.*

Type 8 would add recreational facilities suited to the locality.[6]

COMMENTS

The most important needs to be met by the Hospital Survey and Construction Act in the order of their urgency would appear to be: (*a*) Community hospitals of 50 beds or more for rural communities of 20,000 or more. (*b*) Community clinics[14] of 10 or more beds for rural communities of 4,000 to 18,000. (*c*) *Public health centers to serve as headquarters for single county or multicounty public health units.* (*d*) *Public health* centers to serve as extensions of the single county or multicounty public health units into the smaller communities

The need for public health centers to serve as extensions of the single county or multicounty public health units into communities of 4,000 to 18,000 is real but in my opinion not urgent. Acceptable space for this activity can frequently be rented and maintained at a cost much less than would be the case if a new building was erected.

The really difficult problem is undoubtedly establishing and *operating the community clinics for the communities of less than 20,000.* Hospital administration authorities are in apparent agreement as to the inefficiency of setting up full fledged hospital facilities with kitchen, laundries and laboratory, x-ray and physical medicine facilities for less than 50 beds. Difficult as it is, this problem would appear to offer better hope of effective attack if the primary objective of providing beds for the care of the sick in rural communities more than 30 miles from a general hospital is recognized and met head on The plan of establishing such facilities under the title of public health and medical service centers is of doubtful wisdom for two reasons; *first it confuses the issues, mixing the difficult and urgent problem of providing sick beds with the relatively simple and* nonurgent problem of providing physical facilities for public health nurses and other workers; second, it complicates administration by mixing preventive medical activities which are under the administration of the local public health department with hospital and treatment activities neither of which is under the administration of the local public health department.

If recently trained physicians are to be attracted to such rural communities to begin their practice, there must be made available in the community not only clinical laboratory and *x-ray service but twenty-four hour bedside nursing service* as well. *To obtain this latter service some type of cottage hospital* or community clinic would appear to be essential

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[9] McGibony, J. R., senior surgeon, Hospital Facilities Section, States Relations Division, U. S Public Health Service: Health Center Designed for Rural Needs, Mod Hosp, March 1946

[10] Commission on Hospital Care Technical Staff, Health Center Concept, Hospital Survey News Letter, *22 East Division Street, Chicago 10,* April 1946

[11] Michigan Hospital Survey Committee· Hospital Resources and Needs Report of the Michigan Hospital Survey, W. K. Kellogg Foundation, Battle Creek, Mich, 1946.

[12] Public Law 725, 79th Congress, chapter 958, 2d session, S. 191: An act to amend the Public Health Service Act to authorize grants to the states for surveying their hospitals and public health centers and for planning construction of additional facilities, and to authorize grants to assist in such construction [illegible] 1946. State Agencies Designated to Administer [illegible] ral Security Agency, U S. Public Health Servi [illegible] Facilities, Washington, D C, Dec. 27, 1946.

[13] Reprint from Federal Register, Division of Hospital Facilities, Title 42, Public Health, chapter 1, Public Health Service, Federal Security Agency (F. R. Doc *47-1247; filed Feb. 11, 1947, 8:54 a m*).

[14] It is suggested that small community hospitals of 10 to 40 beds offering a limited medical and maternity service but not including major surgery or specialty services, be given the term "community clinic." Plans and equipment for such units have been proposed in the following publications Hospitals—Architectural Record's Building Types Study, Number 104, Architectural Record, August 1945 Equipment for a 10 Bed Hospital and Health Center, 41546, Federal Security Agency, U. S Public Health Service Hospital Facilities Section Kinde, M. R: Diagnostic Facilities in Rural Areas, Hospitals, January 1943 Sarvis, L J, and Davis, G. L: South Haven Hospital. It Is Efficient and Expandable, *Hospitals,* September 1943

I have no panacea to offer for this problem. I simply point out (*a*) that combining public health center activities with beds does not simplify in any way the problem of maintaining those beds in a small community, (*b*) 60 per cent occupancy of such rural beds would probably have to be considered reasonable utilization (there may be thirteen classifications of patients in a 30 bed hospital). (*c*) While McGibony[14] estimates the cost per patient at $9.40 a day in such a 10 bed hospital, Beelman and Steinmeyer[15] reported in 1945 that fifty-two Kansas hospitals averaging 12 beds each showed costs of only $4 99 a day per patient with an occupancy of 50 per cent. This problem is primarily a hospital administration problem, i. e. how to extend hospital facilities to communities of less than 20,000; the public health problem of extending public health services from the county or multicounty center to the smaller communities is only a minor and incidental part of this big problem.

Public health centers should limit their activities to the generally accepted public health program, adding on functions as the community by organized action places additional responsibilities (such for example as administering the provisions of ambulant medical care to the community's indigent population) on the health department.

Whether in base hospital service areas, intermediate hospital service areas or rural hospital service areas every effort should be made to place the public health headquarters as close as is practicable to the hospital (and the medical school if there is one).[16] Thus there will be developed eventually base medical centers, district medical centers and community medical centers, with the public health centers as one unit of the larger medical center.

In the base and intermediate hospital service areas the public health center had probably best be in a separate building close to the hospital (and medical school if there is one). In rural hospital service areas the public health center may well occupy space in the community hospital or in the community clinic, but the two projects should be kept administratively independent of each other.[16] All of these would be type 1 public health centers.

If a public health center is required in a rural community which does not have and does not need a community hospital or a community clinic, it is suggested that consideration be given to providing in such a center not only facilities for communicable disease control efforts, sanitation activities, maternal-infant-child hygiene measures, vital statistics, health education and public health laboratory service but also facilities for clinical laboratory service and limited x-ray service (type 2 or type 3 centers). If the local practitioners in the area desire office space in such a center in order to obtain easier access to the laboratory and x-ray facilities there should be no serious objection to that request, and a type 4 center should be established

If means are developed for establishing community hospitals and community clinics where needed there would appear to be no need for public health centers of types 5 and 6

In my judgment the advantages of combining welfare facilities or recreation facilities in the public health center would not be sufficient to outweigh the costs and administrative confusion resulting from such a combination, and I see no place for centers of types 7 and 8 under the terms of the Hospital Survey and Construction Act of 1946

CONCLUSIONS

1. At least fourteen different functions have been assigned the health center since 1912.

2. Of these fourteen functions it is recommended that only five (communicable disease control efforts, sanitation, maternal-infant-child hygiene measures, vital statistics and health education) be generally included under the title of public health center as that title is used in the Hospital Survey and Construction Act of 1946.

3. It is recommended that public health centers be established as needed[17] and as close as is practicable to hospitals and medical schools (if any) in base hospital service areas, intermediate hospital service areas and rural hospital service areas and that they be integral parts of base medical centers, district medical centers and community medical centers. It is, however, recommended that at every level the public health center be kept administratively independent and that the differing needs of hospitals and public health centers for quiet and for accessibility be kept in mind.

4. Public health centers to serve as headquarters for county and multicounty public health units are much more urgently needed than are rural public health centers serving as extensions of county and multicounty public health units.

5. It is recommended that in rural communities of 4,000 to 18,000 in need of sick beds but not large enough to afford a 50 bed general hospital "community clinics" of 10 to 40 beds be provided by hospital authorities rather than "public health and medical service centers" provided by public health authorities. However, administratively independent public health centers may sometimes be advantageously housed in the community hospital or community clinic. Such community clinics should be so organized and administered that they will not infringe on the private practice of medicine by physicians.

6. In those rural communities where bed service is available from neighboring community hospitals and the urgent need is for facilities for public health and diagnostic facilities it is recommended that the public health center shall provide facilities not only for the traditional six point public health service but also for clinical laboratory service and limited x-ray service. Offices for the part time use of the practicing physicians of the community should also be included if the physicians so desire.

7. In the interests of economy and administrative efficiency it would appear generally wise to avoid combining medical service functions, hospitalization functions, welfare and social service functions or recreational functions with public health functions in the public health centers projected under the terms of the Hospital Survey and Construction Act of 1946 The public health center should, however, include facilities for meeting effectively any responsibility laid on the public health department by the local community.

Woman's Auxiliary

OFFICERS OF WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

Following are the national officers, directors and chairmen of standing committees for 1947-1948 of the Woman's Auxiliary to the American Medical Association:

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  Second—Mrs. Leo J. Schaefer, 700 Highland, Salina, Kan
  Third—Mrs E Arthur Underwood, 3725 Wuana Vista Drive, Vancouver, Wash
  Fourth—Mrs W. W. Potter, 129 Kenesaw Terrace, Knoxville, Tenn
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  Two years—Mrs I J. Bridenstine, Terry, Mont; Mrs. U. G McClure, 1592 Quarrier St, Charleston 1, W. Va.; Mrs. David S. Long, Harrisonville, Mo
Chairmen of Stan [illegible] ittees.
  [illegible] Simonds, 234 E Pearson St, Chicago 11.
  [illegible] plewhite, 240 Bushnell St, San Antonio, Texas.
  [illegible] dison, 1100 N LaSalle St, Chicago 10
  [illegible] chaefer, 110 E Whitman St, Toccoa, Ga.
  [illegible] B Allman, 104 St Charles Pl, Atlantic City, N. J.
  Postwar—Mrs Rollo K Packard, 4940 S East End Ave, Chicago 15.
  Program—Mrs Ralph Eusden, 4360 Myrtle Ave., Long Beach 7, Calif.
  Public Relations—Mrs. Harold F. Wahlquist, 129 W. 48th St, Minneapolis
  Revisions—Mrs Roscoe E. Mosiman, 2686 Magnolia Ave, Seattle.
  Parliamentarian—Mrs. Clarence G Goodwin, 4646 S. Woodlawn Ave, Chicago 15
  Historian—Mrs Jesse D. Hamer, 1819 N. 11th Ave, Phoenix, Ariz.

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[15] Beelman and Steinmeyer. Kansas Government Journal, July 1945.

[16] Dr Haven Emerson has pointed out that while hospitals are best built where there is freedom from traffic noise, public health centers are most effective when most easily accessible to the public This point is important and should not be ignored in the effort to centralize health and medical facilities

[17] The Hospital Survey and Construction Act of 1946 definitely limits the number of such centers in thickly populated states to one per 30,000 people; in states having a population of less than 12 persons per square mile to one per 20,000 people

Official Notes

STEPHEN GRAHAM CHANGES TIME

The A. M. A.-Mutual radio program Stephen Graham—Family Doctor will change time with its extension from July 28 to November 17.

Beginning July 27 the program will be heard at 2 p. m., Eastern daylight time, including the New York outlet WOR not heretofore available. In the Middle West the program will be on the air at 1 p. m. Central daylight time; in the Mountain areas at 12 noon, Mountain daylight time, and on the Pacific Coast 11 a. m., Pacific daylight time.

There are numerous advantages to this time change. There is a larger listening audience at 2 p. m. than at 10:30 p. m. in the populous Eastern areas. The Hooper Rating Organization will now be able to estimate our audience, whereas no Hooper ratings are taken after 10:30 p. m. Sunday is a fine radio listening day for millions of people who have leisure not available to them on other days.

A specific request is hereby made to county medical society *officers in communities where Stephen Graham is broadcast. It* is requested that they communicate with the radio station program director, asking him what telephone calls and other communications were received on the disappearance of Stephen Graham from the customary Monday evening time spot. Details of such happenings should be reported to the Bureau of Health Education, American Medical Association, Chicago 10. Such information is of great value to the Bureau and to the radio network.

Washington Letter

(From a Special Correspondent)

July 30, 1947.

Liquidate Maternity and Infant Care Program

The Emergency Maternity and Infant Care program is being closed off books of the United States Children's Bureau under the liquidation program ordered by Congress starting July 1 in appropriations for the new fiscal year. Care will be provided for all wives and infants now receiving care as well as those who were eligible as of June 30. A total of more than $124,900,000 has been allotted to the states to cover the cost of the program. Congress has appropriated another three million dollars for the two fiscal years 1947-1948 and 1948-1949 to cover liquidation costs. All of 1,421,000 cases were approved for care. International experts in child medical care and nutrition from twelve countries met here to give technical advice to the International Children's Emergency Fund of United Nations. The fund comprises assets made available by UNRRA and contributions by governments, to which Congress has authorized another 40 million dollars.

Dean's Committee Endorses Bradley's Policies

General Omar Bradley's handling of the Veterans Administration was endorsed by the Dean's Committee of Baltimore in its report on organization of professional staffs of the Veterans Administration Fort Howard and Perry Point hospitals. The chairman is Dr. H. Boyd Wylie, acting dean, University of Maryland Medical School, and members are Dr. Alan M. Chesney, dean, Johns Hopkins Medical School of Medicine and College of Physicians and Surgeons; Dr. Lewis P. Gundry and Dr. Harry C. Hull, Maryland University, and Dr. Alan C. Woods and Dr. Perrin H. Long, Johns Hopkins. The report said that "few of the members of the staffs of the University of Maryland or Johns Hopkins hospitals would be participating in the program were it not for the policies established by General Bradley." The report said that doctors enlisted for service because "it permits them to maintain a high type of medical care and treatment of veterans; it is relatively free from the stifling effects of 'red tape' and bureaucracy; it permits the doctors to practice under conditions comparable to those existing in the best civilian hospitals in Baltimore; it is free (or has been so far) from so-called politics."

Atomic Energy for Health Purposes

The Atomic Energy Commission has reported that it is trying to turn atomic energy into peacetime uses, particularly in the field of health and eventually for the use of atomic energy for power. A statement outlining development of atomic weapons added "An important beginning has been made at exploiting peacetime uses of atomic energy. Radioisotopes, a most promising research tool in chemistry, biology and medicine, and of great promise in agriculture and metallurgy, are being produced and distributed in ever increasing quantity. Shipments of radioisotopes to hospitals and other research institutions now exceed 100 per month. Heavy hydrogen, another isotope of particularly great use in many kinds of research, is available for the first time at low cost."

Higher Pay for Service Doctors

Representative Blackney, Michigan Republican, has submitted to Congress a bill to raise pay of armed forces and U. S. Public Health Service doctors. A medical officer's base salary would be increased $100 a month and specialists an additional 25 per cent. Mr. Blackney estimates costs of the legislation around $9,000,000 a year. The proposal was advanced to meet an "alarming" shortage of service doctors. The income of the average civilian doctor is more than double that of medical officers. Mr. Blackney cited testimony of General Eisenhower, Army chief of staff, that the present Army Medical Corps is sufficient to maintain an army of only 200,000 men, while the strength of the Army is now a million men. Navy medical needs are similarly acute.

Advocates Pelvic Examination for Wacs

Senator Byrd of Virginia has offered an amendment to pending legislation to incorporate the Woman's Army Corps into the Regular Army which would require pelvic examinations of Wacs by doctors, preferably women doctors and specialists in the field. The Army Medical Corps is reported to take the stand that annual or semiannual pelvic examination of women in the Army is unnecessary because out of 115,767 women in the Army during the second world war there were only 187 cancers, 55 involving the pelvic organs. It is contended that a pelvic cancer incidence of 55 per 115,000 might be reduced by more expert examination and early detection of cancer symptoms in young women entering the service.

Coming Medical Meetings

American Association of Medical Record Librarians, New York, Hotel Commodore, Sept. 7-12. Mrs. Adaline Hayden, 18 E. Division St., Chicago, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 4-6. Dr. James R. Bloss, 418 Eleventh St., Huntington 1, W. Va., Secretary.

American College of Surgeons, New York, Waldorf-Astoria Hotel, Sept. 8-12. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2-6. Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr. Karl S. Richardson, 24 West Ohio St., Chicago, Business Manager.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 17-20. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept. 24-26. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

National Medical Association, Los Angeles, Aug. 18-22. Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va., Secretary.

Nevada State Medical Association, Reno, Sept. 4-6. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.

Oregon State Medical Society, Portland, Sept. 4-6. Dr. Thomas S. Saunders, 1020 S. W. Taylor St., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 15-18. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.

Southeastern Dermatological Association, Knoxville, Tenn., Hotel Andrew Johnson, Aug. 31. Dr. A. H. Lancaster, 608 W. Main Ave., Knoxville, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 11-13. Dr. Ray T. Woolsey, 610 McIntyre Bldg., Salt Lake City 1, Secretary.

Western New York and Ontario Urological Society, Saranac, N. Y., Saranac Inn, Sept. 3-6. Dr. Albert M. Crance, 525 S. Main St., Geneva, N. Y., Secretary.

GOVERNMENT SERVICES

ARMY

SEEK FUNDS FOR BUST OF WALTER REED

The American Society of Tropical Medicine will sponsor the campaign to raise funds to provide a bust of the late Major Walter Reed of yellow fever fame to be placed in the Hall of Fame at New York University (The Journal, July 5, p. 909). The Surgeon General's Office will aid in the campaign. It is planned to collect the funds and have the sculpture completed so that it may be dedicated at the time of the International Congress for Tropical Medicine and Malaria, which will be held in Washington, D. C., next spring Contributions are requested and should be sent to the secretary-treasurer, American Society of Tropical Medicine, National Institute of Health, Bethesda 14, Md. Walter Reed is the first member of the medical profession to be chosen for a place in the Hall of Fame for Great Americans on the campus of New York University. He is the seventy-seventh historical figure chosen for this honor.

MICROFILM COPIES OF MEDICAL LITERATURE

The Army Medical Library, Washington, D. C., has a collection of more than a million volumes that have been gathered, catalogued and indexed since 1836, a treasure of medical literature which goes back in some cases to medieval times. Physicians, libraries and professional workers may obtain facsimile replicas of this material on 35 millimeter film through the microfilm service of the library. Those requesting the material receive the film reproduction reduced to the size of a large postage stamp for each page, which can be read in small size film viewers which enlarge the microfilm or they can be projected to readable size in special machines available in many libraries. During 1946 more than six million pages of medical literature were distributed by the Army Medical Library on microfilm. Articles in medical periodicals are duplicated on microfilm for 50 cents each, and books for 50 cents for each fifty pages or fraction thereof.

LOW POSTWAR VENEREAL DISEASE RATE

The War Department has announced that the army venereal disease rate at home and abroad has reached a postwar low. Present incidence in Europe is 23 per cent below the July 1946 high, in the Pacific 50 per cent below the October 1946 high, and in the United States 47 per cent below the April 1946 high. The sharp drop is considered by the Army to have been brought about by the stringent regulations outlined by Secretary of War Patterson last January.

HOSPITAL AT MINOT, NORTH DAKOTA

The contract for the Veterans Administration hospital at Minot, which has been let by the Army Corps of Engineers, calls for a cost of $3,395,000 without the laundry and nurses' quarters and the elevators. Work on the hospital will start at once.

PERSONAL

Col. Roary A. Murchison, M. C., U. S. Army, executive officer at the U. S. Army Percy Jones Hospital, Battle Creek, Mich., has been ordered to duty in Hawaii. Colonel Murchison served in England and France during World War II.

ARMY AWARDS AND COMMENDATIONS

Colonel Myron P. Rudolph

The United States of America Typhus Commission Medal has been awarded to Col. Myron P. Rudolph, M. C., U. S. Army, the citation reading in part as follows: He distinguished himself by exceptionally meritorious service by assisting the work of the United States of America Typhus Commission in Germany during the period March 15 to June 1, 1945, by planning and supervising with conspicuous success the administration and carrying out of details for the control of a full blown typhus fever epidemic raging in the midst of thousands of concentration camp internees. He rendered invaluable service by organizing in the Dachau camps and in southern Bavaria medical units and agencies to bring the typhus epidemic under control. His outstanding contributions to this effort are deserving of the highest praise. Dr. Rudolph graduated from Hahnemann Medical College in 1915 and entered the military service Oct. 5, 1917.

Major David Sloane

The Army Commendation Ribbon has been awarded to Major David Sloane, M. C., A. U. S., now of Dayton, Ohio. The citation read in part as follows: Your service with the Medical Department has been exceptional when compared with others of the same grade or similar position, and I wish to commend you for your outstanding contribution as chief of the orthopedic section, Thomas M. England General Hospital, Atlantic City, N. J., from Feb. 3, 1946 to May 10, 1946. Dr. Sloane graduated from Columbia University College of Physicians and Surgeons, New York, in 1925 and entered the military service in August 1942.

Captain Jerome D. Solomon

The Legion of Merit has been awarded posthumously to Capt. Jerome D. Solomon, M. C., A. U. S., of Chicago. The citation read as follows: For exceptionally meritorious conduct in the performance of outstanding services at Sansapor, Dutch New Guinea, from Aug. 18 to Sept. 4, 1944. Captain Solomon, though convalescing from a serious illness, volunteered to accompany his unit when it was ordered to an operational area known to be infested with typhus. Immediately on arriving, his organization was ordered to construct a field hospital for typhus cases and began to receive patients at once. Despite his weakened condition he insisted on aiding in the construction of the hospital and subsequently took charge of the first ward of patients. Short of personnel, and by this time suffering from the fever himself, he entered on his duties as a medical officer, caring for the sick night and day. Finally his lowered resistance, brought about by his prolonged activity, forced him to become a patient. He later died of typhus fever. By his great devotion to duty in caring for his comrades at a time when the medical facilities were taxed to their utmost, and with the knowledge that he was endangering his own life, Captain Solomon performed outstanding service beyond the call of duty. Dr. Solomon graduated from the University of Illinois College of Medicine in 1941 and entered the military service in September 1942. As a memorial, his father has established the Dr. Jerome D. Solomon Memorial Research Foundation.

VETERANS ADMINISTRATION

RESIDENCY TRAINING PROGRAMS

Two new residency training programs for physicians desiring to train in neurology under the Veterans Administration have been organized. These residencies offer training toward certification in neurology by the American Board of Psychiatry and Neurology.

The first new program will be conducted under the auspices of the New York University and the neurologic service of the psychiatric division of the Bellevue Hospital, New York. The program provides for training at Bellevue Hospital and the Veterans Administration New York Regional Office. Applications should be sent to Dr. S. Bernard Wortis, Chairman, Deans Subcommittee for Neurology, New York University, 400 East Thirtieth Street, New York.

The second new program has been organized by the George Washington School of Medicine and the Georgetown University Medical School. Residents will be offered training facilities at the Gallinger Municipal Hospital and the VA Hospital, Washington, D. C., the VA Regional Office, Childrens Hospital, and the Army Institute of Pathology. Applications should be forwarded to Dr. Walter Freeman, Chairman, Deans Subcommittee for Neurology, 2014 R Street N.W., Washington, D. C.

Other medical schools affiliated with the Veterans Administration for residency training in neurology where training programs are already under way, are:

Medical School	VA Hospitals and Clinics	Applications Received by
Cornell University Columbia University	Bronx, N. Y Hospital	Dean Willard C. Rappleye, 630 N 168th Street New York
Northwestern Univ. University of Illinois	Hines, Ill. Hospital	Dr Lewis J. Pollock, Northwestern University, Chicago
Univ. of Minnesota	Minneapolis	Dean Harold S. Diehl, University of Minnesota, Minneapolis 14
Boston University Tufts Medical College Harvard University	VA Hospital, Framingham, Mass.	Dr. Harry C Solomon, Chairman, Deans Subcommittee for Neuropsychiatry Harvard Medical School, Boston
Jefferson University Medical College and Clinic		Dr Edward A. Strecker, Chairman, Deans Subcommittee for Neuropsychiatry 111 North 49th Street, Philadelphia 39

EXHIBIT OF PROSTHETIC DEVICES

After more than a year's work in cooperation with the prosthetic appliances industry, which contributed most of the items at no expense to the government, a permanent exhibit of nearly a thousand items of prosthetic devices has been opened in the Veterans Administration building, Washington, D. C. Among the items on display are some three hundred and fifty different types of legs and arms, hearing aids, cosmetic hands, plastic eyes, wheel chairs, crutches, facial prosthetic devices, and wigs. The exhibit will enable prosthetic specialists in the Veterans Administration to make a critical analysis of the different features of the various aids and help veterans select the devices best suited to their needs. The exhibit should also aid in eliminating duplication of effort and research work in providing a central point at which inventors may learn what has already been developed in this field.

PATIENTS STUDY FROM TEXTBOOKS FLASHED ON CEILINGS

To patients flat on their backs for long periods such as those in tuberculosis hospitals and paraplegic centers, the Veterans Administration for the first time is bringing its educational program by flashing with special projectors microfilmed pages of textbooks on the ceilings over their beds. Thirty-two manuals have been microfilmed for the courses used in the Veterans Administration educational therapy program to launch this project. The subjects include English grammar, American government, physics, photography, refrigeration, radio for beginners, and books on the establishment and operation of small business. As patients complete the study of a page projected on the ceiling they turn the page by pressing a button on the projector to throw a new page on the ceiling. The special projectors were purchased by service organizations and similar groups throughout the country and were donated to the Veterans Administration without cost to the government. All Veterans Administration tuberculosis hospitals and paraplegic centers have several copies of each text film so that more than one veteran can study the same subject at the same time.

PERSONAL

Dr. Vernon C. Branham has been appointed assistant chief, outpatient section, Neuropsychiatry Division at the Central Office, Washington, D. C. Dr. Branham formerly was deputy commissioner of correction in New York, director of the New York State and City commissions for mental hygiene, and more recently director of the Woodbourne Institution for defective delinquents in New York.

PUBLIC HEALTH SERVICE

DR. MOUNTIN APPOINTED ASSISTANT SURGEON GENERAL

Dr. Joseph W. Mountin has been appointed associate chief, Bureau of States Services, U. S. Public Health Service, with the rank of assistant surgeon general, replacing Dr. Herman E. Hilleboe, who recently became health commissioner of New York. Dr. Mountin, who was formerly chief of the Division of States Relations in the Bureau of State Services, will be associate chief of the bureau and will continue to emphasize assistance to states for the development of full time local health departments. He joined the public health service in 1917 and in the last ten years has been in charge of several national divisions of the public health service, including the former Division of Public Health Methods, National Institute of Health and the former Division of Domestic Quarantine. He is a graduate of Marquette University School of Medicine, Milwaukee, and took part in the National Health Survey in 1935-1937, conducting the first mass study of hospital facilities in the United States.

RESEARCH FELLOWSHIPS

Under the research fellowship program of the U. S. Public Health Service, one hundred and sixty-one fellowships had been awarded to qualified scientists from 1945 when the program was inaugurated to May 6, 1947. The expansion of this program in the present fiscal year was made possible by increased Congressional appropriations for cancer, mental health and other research projects. The research fellowships advisory committee, composed of civilians, met at the National Institute of Health, Bethesda, Md, July 18, to advise the Surgeon General of plans to expand the research program

PERSONAL

With the approval of Surgeon General Parran, Dr. R. C. Williams, Assistant Surgeon General, has been appointed a member of the board of directors of the Music Research Foundation, Inc., a nonprofit organization which has for its purpose the study of the use of music in the treatment of disease. Dr Williams will act as chairman of the executive committee of the board of directors.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

California

Amyes, Edwin W.	Los Angeles
Anderson, Nels H.	San Fernando
Blum, John	Berkeley
Bolton, Warren F.	Los Angeles
Dolhinow, Jack L.	Los Angeles
Eisenbeiss, John A.	Los Angeles
Egan, Albert R.	San Diego
Groth, George W.	Sierra Madre
Hanzlik, Harold	Belmont
Larrabee, James F.	Beverly Hills
Miranda, Melvyn R.	Long Beach
Parker, Stanley G.	Campbell
Rydholm, Carl O.	Glendale
Sachs, Maurice D.	San Francisco
Shepherd, Ford	Menlo Park
Turkel, Henry W.	San Francisco
Walsh, Joseph F.	Eureka

Connecticut

Bever, Christopher T.	Hartford
Boswell, Clay S.	West Hartford
Kummer, Jerome M.	Wallingford
Lenoci, Ralph J.	Bridgeport
Mariani, Ronald A.	New London
Moore, Maurice R.	Norwich
Rogawski, Alexander S.	Waterbury

Georgia

Burge, Charles D.	Atlanta
Elder, John D.	Winder
Franklin, Benjamin	Atlanta
Lemon, Luther J.	McDonough
Matthews, William A.	Atlanta
Miracola, Charles C.	Augusta
Parks, Joseph W. Jr.	Newman
Sirmons, Derrel C.	Dahlonega
Wasden, Howell A. Jr.	Millen

Illinois

Atlas, Gerald D.	Chicago
Bigelow, Robert R.	Chicago
Billings, James H.	Chicago
Burianek, John F.	Berwyn
Cassel, William J. Jr.	Chicago
Drell, Hyman J.	Chicago
Eissler, Rolf	Chicago
Epperson, Eugene B. Jr.	Mount Vernon
Hasewinkel, Carroll W.	Marshall
Hauch, Edward W.	Chicago
Kudzma, Anthony J.	Cicero
Mitchell, George T.	Marshall
Mitchell, Hollard C.	La Grange Park
Potter, Thomas P. Jr.	Chicago
Reiss, George I.	Chicago
Turnbull, Theodore	Neponset
Vynalek, William J.	Riverside
Wallner, Linden J.	Skokie

Indiana

Donham, William L.	Bicknell
Chattin, Robert N.	Union City
Greist, John H.	Indianapolis
Henry, Howard J.	Knox
Larmore, Joseph L.	Muncie
Moore, Harold T.	Indianapolis
Walters, Charles E.	Indianapolis

Iowa

Bennett, Chester G.	Iowa City
Beyer, George D.	New London
Gehling, Victor H.	Calmar
Hill, Thomas L.	Des Moines
Simmons, Abbott P.	Knoxville
Tracy, Harold L.	Cedar Rapids

Maryland

Beale, Henry D.	Chevy Chase
Brown, Thomas M.	Baltimore
Hamill, James E.	Bethesda
Milloff, Bernard	Silver Spring
Supik, William J.	Baltimore

Massachusetts

Berry, Frank D.	Milford
Blacklow, Daniel J.	Dorchester
Dixson, Ira	Stockbridge
Hagan, Cornelius E. Jr.	Fall River
Kavalgian, Aram	Watertown
Larcom, Rodney C. Jr.	Deham
Moore, Carlton W.	Georgetown
Parker, William	Dorchester
Sylvester, Rowland E.	W. Somerville
Tessier, Roland N.	Springfield
Wadsworth, Richard C.	Waltham

Michigan

Adamian, Gerald	Detroit
Bailey, Robert S.	East Lansing
Dolfin, Wilbur E.	Wayland
Haarer, John G.	Grosse Ile
Linkner, Leonard S.	Detroit
McIntyre, Kenneth E.	Detroit
Martin, Robert G.	Detroit
O'Sullivan, Girardin S.	Flint
Parker, Willard	Ann Arbor
Rutzen, Arthur C.	Detroit
Wanless, Loren E.	Detroit
Yates, Arthur J. W.	Detroit

Minnesota

Barr, Maxwell M.	Minneapolis
Bixler, Louis C.	Minneapolis
Johnson, Reinald G.	Minneapolis
Logan, Archibald H. Jr.	Rochester
Maguire, Leo M.	Minneapolis
Satory, John J.	Wabasha
Schmitz, Glenn P.	Melrose

Missouri

Daake, John W.	St. Louis
Donley, Leo F. Jr.	St. Louis
Eckert, Clarence T.	University City
Good, William O.	Kansas City
Haffner, Heinz E.	St. Louis
Kinsella, Ralph A. Jr.	St. Louis
Marshall, Homer C. Jr.	St. Louis
Stricker, Harold C.	St. Louis
Twente, George E.	St. Louis

New Jersey

Borrus, Joseph G.	Newark
Brown, Angus M.	Newark
Campo, Salvatore T.	Westville
Dunbar, Howard S.	Roselle Park
Feinberg, David D.	Bayonne
Krudener, Robert D.	Cliffside Park
Leonard, Justin T.	Skillman
Moran, Frank T.	Jersey City
Wagner, Richard	Elizabeth

New York

Aey, Arthur E.	Dunkirk
Allende, Manuel F.	New York
Barber, Hugh	Richmond Hill, L. I.
Corcoran, James	Central Islip
Deutsch, Irvin	Pearl River
Dexter, Fred E. Jr.	Narrowsburg
Diamond, Howard P.	Forest Hills
Feinberg, Samuel	Port Jefferson
Grey, Stephen J.	Schenectady
Hunter, Leland H.	New York
Jacobi, Martin H.	Norwich
Kurtz, Kenneth A.	Syracuse
Lapinsky, Herbert	Brooklyn
Lockwood, Howard	Brooklyn
Moore, Samuel W.	New York
Phillips, Roswell W.	New York
Rausch, Carlton C.	Buffalo
Rothschild, Carl E.	Brooklyn
Rubin, Joseph D.	New York
Schwartz, Morris S.	Richmond Hill
Shapiro, Edward	Brooklyn
Stein, Joseph	Hawthorne
Wald, Milton A.	Brooklyn

Ohio

Buchert, Charles H.	Cincinnati
Burney, Thomas E.	Portsmouth
Cahill, Robert C.	Columbus
Gray, William B.	Dayton
Hawkins, Benjamin L.	Cincinnati
Nickerson, Neil D.	Cleveland
Paul, Louis P.	Lakewood
Schwartz, Harold	Cleveland
Slatmyer, Karel R. Jr.	Elyria
Tille, Raymond J. Jr.	Mount Vernon
Urankar, Albin F.	Euclid
Woliver, Edward	Cincinnati

Pennsylvania

Blomain, Emile W. Jr.	Archbald
Brown, Manson F.	Franklin
Cutler, Paul	Philadelphia
Della, Anthony V.	Philadelphia
Eichman, Joseph C.	Bala Cynwyd
Garofalo, Carl A.	East Millsboro
Hauger, Harold N.	North Braddock
Keck, William S.	Mount Pleasant
Sonis, Meyer	Philadelphia
Underwood, Grant	Richeyville
Wallace, Clarence M.	Hummelstown

South Dakota

Geppert, Joseph W.	Vermillion
Giese, Douglas H.	Mitchell
Reinoehl, Warren L.	Winner

Texas

Althaus, John W. A.	Fort Worth
Brown, Jesse B.	Belton
Donovan, Thomas J.	Houston
Etier, Edgar L. Jr.	Fort Worth
Rothschild, Joseph E.	Dallas
Salmeron, Pedro Jr.	Houston
Springall, Francis S.	Dallas
Wade, T. W.	Kilgore

Utah

Brockbank, Mark J.	Price
Brown, John Z. Jr.	Salt Lake City
Olsen, Don D.	Ogden
Sanders, Myrle S.	Salt Lake City
Smith, Donald E.	Salt Lake City

Virginia

Berkeley, Alfred R. Jr.	Roanoke
Carter, George B.	Purcellville
Lechausse, Ralph M.	Pardee
Newbold, Herbert L. Jr.	Newport News
Salasky, Milton	Norfolk

Washington

Casey, James M.	Wenatchee
Drischel, Frank G.	Spokane
Kelley, Floyd C.	Seattle
Mering, Thomas W.	Spokane
Spendlove, Joseph G.	Seattle

West Virginia

Di Cello, Anthony J.	Elkins
Giglia, Tony R. Jr.	Glen Jean
Hartman, Ira F.	Buckhannon
Margolis, Lester H.	Montgomery
Schafer, Earl W. Jr.	Elm Grove

Wisconsin

Becker, Dean B. Jr.	Fort Atkinson
Dittmer, Otto A. Jr.	Milwaukee
Robinson, Thomas N.	Milwaukee
Simonds, Hamilton P.	Campbellsport

Puerto Rico

Alvarez, Jose A.	Arroyo
Alvarez, Luis Jr.	Santurce
Ferraioli, Cosme J.	Santurce
Mendez, Nicolas	Camuy

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

A New Ophthalmic Hospital.—Dr. Charles A. Thigpen, Montgomery, has presented to the Medical College of Alabama, Birmingham, $10,000 to be used to convert one floor in the Jefferson Hospital into an ophthalmic hospital, with operating rooms, museum, conference rooms and beds for patients. The gift is in memory of his nephew Dr. Job T. Cater, who was associated with him in practice until his death in 1940.

CALIFORNIA

Narcotic Violation.—Dr. Albert Peterson, 998 Page Street, San Francisco, pleaded guilty in the United States District Court at San Francisco to violation of the Federal Narcotic Law and on May 19 was sentenced to a term of five years.

Alameda County Blood Bank.—The Blood Bank of the Alameda County Medical Association has assumed full responsibility for the replacement of blood withdrawals. More than 700 pints is withdrawn each month. To maintain blood reserves, business, industrial, labor and club groups have been asked to establish blood credit plans. These plans are advance blood deposits on which group members may draw without posting a $25 replacement deposit. The objective of the plan is to maintain minimum monthly quotas for each group. Arrangements have been made with the American Womens Voluntary Services to provide free delivery for the blood. The board of directors asks each doctor to accept his share of community responsibility in seeing that his patients replace blood that he has withdrawn for them.

Personals.—Dr. Clesson Richardson and his wife, both San Francisco physicians, have left for Korea on the army hospital ship *Hope* to take charge of a general hospital for the Salvation Army at Yong Dong, 150 miles from Seoul. The Richardsons are the first Salvation Army representatives to be assigned to work in the Orient since the war. They went to Korea in 1940 to open this same hospital but returned because of Japanese opposition.——Dr. Leo Eloesser, San Francisco, formerly professor of clinical surgery at Stanford University School of Medicine, San Francisco, is returning to China on behalf of the World Health Organization Interim Commission. Dr. Eloesser was assigned as teaching specialist in surgery for the Chinese medical training program of the UNRRA in 1945 (The Journal, Sept. 29, 1945, p. 1049).

Postgraduate Courses for Practitioners.—Stanford University School of Medicine, San Francisco, in cooperation with the San Francisco Department of Public Health and the San Francisco Hospital, will hold postgraduate medical courses for practicing physicians September 8-12. Registration closes August 16. Morning courses will be on the subject of oncology, internal medicine, fractures and orthopedic problems and general problems in pediatrics. The afternoon courses will be on the subject of general surgery, general problems in surgical specialties, management of diabetes and obesity, and neurology and psychiatry. A course in anesthesiology, limited to eight physicians whose practice already includes anesthesiology, will also be offered. Subjects for evening meetings are body fluids and their replacement, chemotherapy and antibiotics, and hematology. The registration fee is $50.

COLORADO

Short Course in Chest Diseases.—A two week postgraduate course in chronic chest diseases, presented by the American Trudeau Society and the University of Colorado School of Medicine, began July 28 at the Colorado Medical Center, Denver, with special emphasis on tuberculosis. Thirty-five physicians from twelve states are enrolled. The instructors are members of the school of medicine faculty, three physicians from the Denver County Medical Society and nine visiting faculty members.

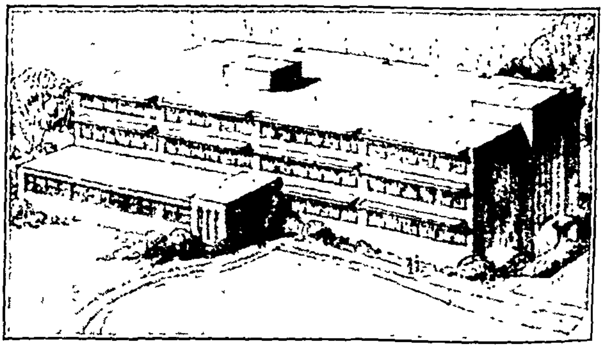
CONNECTICUT

Home Town Medical Care.—The contract between the Connecticut State Medical Society and the Veterans Administration to provide home town medical care for the state's war veterans has been renewed for one year. It has also been announced by the Veterans Administrations that its contract with the Connecticut Pharmaceutical Association has been renewed for the same period.

Rural Medical Service.—A recent poll of opinions from the general public conducted by the Connecticut State Medical Society's Committee on Rural Medical Service indicates that rural residents desire more medical specialists in the smaller towns, more hospital beds and the extension of hospital care plans. Other opinions thus expressed, according to Dr. Creighton Barker, secretary of the state medical society, comprise a general feeling among rural residents that the costs of medical care, although high, have not outrun other necessary costs of living, and an expression favoring the coordination of the home nursing services of various agencies. The report was made before 125 representatives of civic, farm and health agencies who attended Connecticut's first rural health conference July 16 at the University of Connecticut, New Haven.

ILLINOIS

Tuberculosis Research Center to Supply BCG Vaccine.—Governor Green has signed a bill authorizing the construction and maintenance of a tuberculosis research hospital in conjunction with the University of Illinois College of Medicine, Chicago. It includes an appropriation of $361,250. The Institute for Tuberculosis Prevention, which will be built on the medical campus and be run in close cooperation with the City of Chicago Municipal Tuberculosis Sanitarium, will supply BCG vaccine for the U. S. Public Health Service, now carrying on a project in Columbus, Ga., for a long range study of the vaccine. The vaccine, which can now be manufactured at a cost of about half a cent per dose, will be distributed to regular health agencies, city, state and federal, but not on commercial lines. The Research Foundation board headed by Park Livingston, president of the trustees of the University of Illinois College of Medicine, Chicago, has been set up to raise additional funds for operation of the institute. Among those associated with him are Dr. Walter H. Theobald, head of the mayor's medical center commission; Dr. Ernest E. Irons, Rush professor of medicine (emeritus); Dr. Robert Black, head of the department of pediatrics at Loyola University; Dr. Alexander A. Day, head of the department of bacteriology at Northwestern University, and Dr. Michael F. McGuire, clinical professor of surgery at Loyola University School of Medicine.



Architect's drawing of the institute.

Chicago

Coeducational School for Nurses.—Mount Sinai Hospital will conduct a coeducational school for nurses accredited by the Illinois State Department of Registration, beginning September 3. All applications should be in the registrar's office one month prior to this date. Last January 1 the hospital opened its new Nurses and Educational Building, which cost $825,000 to construct and $100,000 to equip.

Dr. Tom Spies to Head New Department.—Northwestern University and the Spies Committee for Clinical Research will establish in Chicago a center for medical research in the field of nutrition and metabolism. The agreement provides that Dr. Tom D. Spies, associate professor of medicine at the University of Cincinnati, will become professor of nutrition and metabolism and chairman of a new department in this field in the Medical School of Northwestern University. Following his resignation from the University of Cincinnati he will assume his new duties September 1, at which time the Spies Committee will sever its relationship with the University of Cincinnati. The agreement further provides that the committee will grant to the university at least $150,000 annually for five years to be used for the expenses of this department and for research carried on under Dr. Spies. The committee will shortly embark on a program to raise funds to house and endow the new department. The Spies Committee for Clinical Research was organized in 1943. Dr. Spies in 1937 organized, and has since directed, the University of Cincinnati studies in nutrition at the Hillman Hospital nutrition clinic, Birmingham, Ala., and this work will continue under his direction.

INDIANA

Dr. Zeller Appointed Director of Mental Health.—Dr. Charles A. Zeller, Lansing, Mich., began duties August 1 as director of the Indiana Council for Mental Health and superintendent of the Madison State Hospital, North Madison, succeeding Dr. Clifford L. Williams, resigned. Dr. Zeller, a graduate of the University of Buffalo School of Medicine, 1927, has served with state mental hospitals in Pennsylvania. In 1946 he was appointed director, Michigan Department of Mental Health.

KENTUCKY

Memorial to Dr. Owen.—Plans for a convalescent home for crippled children were announced early in June as a memorial to Dr. W. Barnett Owen, professor of orthopedic surgery at the University of Louisville School of Medicine who died February 23. Dr. Irvin Abell, professor emeritus of the School of Medicine, is chairman of the W. Barnett Owen Committee, which hopes to raise $150,000 to cover the cost of the home to be built on the grounds of the Kosair Crippled Children's Hospital in Louisville.

State Program for Handicapped Persons. — Practicing physicians and county health units have received letters from the division of special education of the department of education in Frankfort asking aid in administering the state program for physically and mentally handicapped persons. Funds are provided for surgery, hospitalization, medical treatment, purchases of artificial appliances and payment for employment training of persons who qualify for assistance. They must be over 16 years of age and have such impairments as blindness, deafness, cardiac disability, arrested tuberculosis or any crippled condition or physical abnormality constituting an employment handicap.

LOUISIANA

Personal.—Ralph E. Brauer, Ph.D., formerly on the faculty of Harvard Medical School, Boston, joined the faculty of the Louisiana State University School of Medicine, New Orleans, July 1, as assistant professor of pharmacology. He has received a grant of $5,000 from the National Institute of Health for research on the effect of liver injury on plasma proteins.

Cerebral Palsy Center.—The Orleans Unit of the Louisiana Society for Crippled Children has established a cerebral palsy center on the grounds of L'Union Francaise under the approval of the Orleans Parish Medical Society. It will be operated for the time being twice a month on the second and fourth Saturdays from 9 to 1 o'clock. The purpose of the center is to furnish instructions to the parents and guardians of spastic children in their care at home. No diagnosis or treatment will be given, nor will there be interference of duplication of treatment received by the children at clinics or from their private physicians. Dr. H. Theodore Simon is the medical adviser and Dr. Lyon K. Loomis the orthopedist.

MASSACHUSETTS

Appoint Professor of Preventive Medicine.—Dr. David D. Rutstein, New York, has been appointed professor of preventive medicine at Harvard Medical School, Boston, succeeding Dr. John E. Gordon, who since July 1, 1946, has been head of the department of epidemiology in the school of public health. Dr. Rutstein, a graduate of Harvard Medical School, 1930, served in the New York State Department of Health, first as a consultant in pneumonia and then as chief of the cardiac bureau. He has been an assistant professor of medicine at Albany Medical College and, on leave, an instructor in medicine at Columbia University College of Physicians and Surgeons, New York. During the war he was national director of the Gas Protection Section of the Office of Civilian Defense and was deputy commissioner of health for the New York City Health Department. Since 1946 he has been medical director of the American Heart Association and the American Council on Rheumatic Fever and a consultant to the Joint Research and Development Board of the departments of War and Navy.

MICHIGAN

Psychiatric Research Project.—The National Committee for Mental Hygiene, the Federal Office of Vocational Rehabilitation and the Michigan State Board of Control for Vocational Education will conduct a psychiatric research project in Wayne County. The staff, including a psychiatrist, clinical psychologist, psychiatric social work consultant, five psychiatric social workers and four clerks, will begin the project this fall under the supervision of the state rehabilitation division and the national committee. The results will be of value to science as well as to the future rehabilitation program for the mentally disabled.

Tuberculosis in Michigan.—Figures released by the state department of health show that tuberculosis took the lives of nearly twice as many men as women in Michigan in 1946. Male deaths due to tuberculosis numbered 1,214 and female deaths 629. More than 45 per cent of tuberculosis deaths among women occurred under 30 years of age, while 49 per cent of tuberculosis deaths among males occurred over 50 years of age. The Michigan trend is similar to national figures in this regard. The greatest number of female deaths were between the ages of 20 and 30, and the greatest number of male deaths over 60. Of the total of 1,843 deaths attributable to tuberculosis, 64 were of children under 5 years of age and 20 of these were children under 1 year. The death rate due to tuberculosis is 33.4 per hundred thousand of population and does not vary greatly from the previous five year average of 32.6 per hundred thousand.

MINNESOTA

Father and Five Sons Open Clinic.—Dr. William F. C. Heise, Winona, with his five sons, all physicians, opened a clinic in Winona July 7, where he has been practicing since 1898. The oldest son, Herbert, a graduate of Jefferson Medical College, Philadelphia, specializes in surgery. Dr. William, a graduate of Northwestern University Medical School, Chicago, is a pediatrician. Dr. Phillip, a graduate of the University of Arkansas School of Medicine, Little Rock, now a resident in obstetrics and gynecology, will join the staff in November. Dr. Paul, a graduate of Marquette University School of Medicine, Milwaukee, specializes in pathology and surgery. The fifth son, Dr. Carl, a graduate of Jefferson Medical College, was a resident physician on the eye, ear, nose and throat service at St. Luke's Hospital, Chicago. Winona has a population of about 22,490.

MISSISSIPPI

Deadline Near for Medical Scholarships.—August 15 is the deadline for receipt of applications for scholarship loan grants to become effective in September and October, and August 20 is the deadline for receipt of all credentials for applications filed by or before August 15 with the State Medical Education Board. At its last few meetings the board approved 13 more scholarship loans effective during the summer and fall of 1947, making a total of 73 loans approved to date. These 73 students who are preparing to return as general practitioners to rural areas in Mississippi will attend thirteen medical schools throughout the nation. Among these are seven women and eight Negroes. Forty-two of the students are veterans of World War II.

NEW YORK

Postgraduate Instruction.—The Medical Society of the State of New York and the New York State Department of Health have arranged two postgraduate lectures, one for Suffolk County Medical Society at Irving House, Southampton, Long Island, for July 30. Dr. James W. Hinton, associate clinical professor of surgery, Columbia University College of Physicians and Surgeons, spoke on "The Surgical Treatment of Hypertension." Postgraduate instruction for the Cayuga County Medical Society will be given at the Osborne Hotel, Auburn, September 18 at 8:30 p. m. William F. Bale, Ph.D., associate professor of radiology, University of Rochester School of Medicine and Dentistry, will speak on "Medical Aspects and Hazards of Controlled Nuclear Energy."

New York City

Two New Directors of Services. — Dr. A. Benson Cannon, professor of dermatology at Columbia University College of Physicians and Surgeons, began serving July 3 as director of the dermatology service at Presbyterian Hospital, succeeding Dr. J. Gardner Hopkins. Dr. Cannon was acting director of the dermatology clinic at the hospital from 1942 to 1946. Dr. Edmund P. Fowler Jr. succeeds Dr. John D. Kernan as professor of otolaryngology and director of the ear, nose and throat service at the Columbia-Presbyterian Medical Center. He took his medical degree at Columbia University College of Physicians and Surgeons, New York, 1930, and has been assistant attending otolaryngologist at Presbyterian Hospital since 1938. During the late war his work in aviation medicine and studies of diseases of the ear in military personnel won him the Legion of Merit award.

Affiliation with Institute for Rehabilitation Program.—The affiliation between Columbia University College of Physicians and Surgeons and the Institute for the Crippled and Disabled to develop a program of rehabilitation and reeducation of the disabled was announced July 7. The new agreement will provide a means for training physicians, technicians, nurses, psychologists, social workers, vocational councilors, educators and those of other related professions. The institute will continue its independent existence. Cooperation with community groups, universities, medical schools, hospitals and institutions in addition to Columbia will be continued and encouraged. Columbia will nominate the medical board of the institute. Dr. Frank E. Stinchfield, associate in surgery at Columbia, will head the institute's medical services as orthopedic surgeon in charge. Two assistant medical directors and a staff of medical consultants will be named to conduct the expanded medical program of the institute.

Appoint Dr. Sulzberger Director of Department.—Dr. Marion B. Sulzberger, assistant clinical professor of dermatology and syphilology, New York Postgraduate Medical School and Hospital at Columbia University, has been appointed professor of clinical dermatology and syphilology of the New York Postgraduate Medical School and director of the department of dermatology and syphilology of the New York Skin and Cancer Unit. He succeeds Dr. George M. MacKee, who is retiring and has been made professor emeritus of the medical school. Dr. Sulzberger received his medical degree from the University of Zurich in Switzerland in 1926. He was on the staff of the Dermatology Clinic at the University of Switzerland and the University Clinic of Breslau, Germany. He was an assistant attending physician at the New York Postgraduate Hospital as well as on the staff of the New York Skin and Cancer Hospital and a research associate in medicine at Columbia University. He has served on the board for the Society of Investigative Dermatology since 1937.

PENNSYLVANIA

Academy of Physical Medicine.—At the regular monthly meeting of the Pennsylvania Academy of Physical Medicine in Philadelphia, June 19, a symposium on backache was presented by three Philadelphia physicians, Drs. Henry T. Tumen on the medical aspects, Michael Scott on the neurosurgical aspect and Abraham M. Rechtman on the orthopedic aspect. Officers elected for the ensuing year are Drs. Harold Lefkoe, Philadelphia, president; William Schmidt, Philadelphia, vice president; Herman L. Rudolph, Reading, secretary and John H. Hennemuth, Emmaus, treasurer.

Philadelphia

New Head of Ophthalmology Department.—Dr. Glen G. Gibson, Philadelphia, has been appointed professor and head of the department of ophthalmology at the Temple University School of Medicine and Hospital, succeeding Dr. Walter I. Lillie, who died February 21. Dr. Gibson, a graduate of St. Louis University School of Medicine, St. Louis, in 1930, has been an associate professor of ophthalmology at Temple University School of Medicine. He interned at Providence Hospital, Detroit, and was a fellow in ophthalmology at the Mayo Clinic, Rochester, Minn., 1931-1934.

Second Epidemic Among Infants.—For the second time in six months the maternity ward of the Philadelphia General Hospital has been closed to new patients because of an outbreak of gastroenteritis which has caused two deaths. The decision to close the ward was taken at a conference between Bernard Segal, inspector of the bureau of communicable diseases of the city health department, and physicians at the hospital. Dr. Rufus S. Reeves, city director of public health, said that gastroenteritis appeared in the infant ward on June 23. Earlier this year 27 babies died in eastern New Jersey and Pennsylvania, with most of the cases originating in Allentown, Pa. (The Journal, May 17, p. 307).

Begin Construction of Cancer Research Laboratory.—The Institute for Cancer Research, Inc., Philadelphia, broke ground early in June for the construction of a laboratory costing more than $1,000,000 at Fox Chase. Ground for the institute, which was formed three years ago, is being provided by Jeanes Hospital for a period of ninety-nine years. The hospital will cooperate with the institute technically. Funds will be donated by J. Howard Pew, J. N. Pew, Miss Ethel Pew and Mrs. Mabel Pew Myrin. The main laboratory will house 100 research workers in its three stories and basement. The Lankenau Research Institute building will continue to be used by the Institute for Cancer Research when its new building is completed in about a year. The Institute for Cancer Research, Inc., while a separate legal corporation, will continue with the staff of Lankenau Research Institute, which has been engaged in cancer research and associated diseases for more than twenty-five years. Dr. Stanley P. Reimann will continue as its director.

TEXAS

Gift to Rehabilitation Clinic.—In recognition of the work of the staff of the John Sealy Hospital, Galveston, in connection with the Texas City disaster victims, the Monsanto Chemical Company of St. Louis has given a grant of $25,000 to assist in the development of a Rehabilitation Clinic at the University of Texas Medical Branch, Galveston. Other industrial concerns in the Texas City-Galveston area are also assisting in the development of the project. The clinic will be developed in accordance with the recommendations of the Baruch Committee for Physical Medicine and will involve the services of orthopedic surgery, neurosurgery, plastic surgery, physical and occupational therapy, psychologic guidance, social readjustment and job placement.

Dr. Rigdon to Head Laboratory.—Dr. Raymond H. Rigdon, professor of pathology at the University of Arkansas Medical School, has accepted appointment as professor and director of the laboratory of experimental pathology at the University of Texas Medical Branch, Galveston. Dr. Rigdon received his M.D. degree from Emory University School of Medicine, Atlanta, Ga., 1931. Following a residency in pathology at Duke University School of Medicine, Durham, N. C., he became assistant professor of pathology at Vanderbilt Hospital, Nashville, Tenn. He was an associate professor of pathology at the University of Tennessee, 1939-1944, before going to the University of Arkansas. Dr. Rigdon is chairman of the southwestern section of the Society for Experimental Biology and Medicine.

WEST VIRGINIA

Care of Poliomyelitis Patients.—A training program designed to provide improved service for poliomyelitis patients in hospitals has been instituted by the Kanawha County chapter of the National Foundation for Infantile Paralysis. Several poliomyelitis emergency volunteers have completed a theoretical course and are now receiving bedside training at the Marmet Hospital, Marmet, and at Morris Memorial Hospital for Crippled Children at Milton. They will assist doctors, nurses and physical therapists in the care of patients. The program in Kanawha County is under the direction of Mrs. Fred Sarles, Charleston, the National Foundation's assistant director of women's activities in West Virginia. Instructions are being given by physicians active in the program.

Dr. Rossman to Head Bureau of Mental Health.—Dr. William B. Rossman, Charleston, has been appointed director of the new bureau of mental health of the state department of health. Plans for the new bureau were completed by the Public Health Council at a meeting in Charleston June 30. The establishment of mental clinics in various parts of the state is part of the program being planned. No appropriation was made by the legislature, but one third of the expenses will be paid from the state health department's general fund and the remainder will be provided by the federal government under provisions of the national mental health act passed by Congress in July 1946. Dr. Rossman, a graduate of Indiana University School of Medicine, Bloomington-Indianapolis, 1938, served in the ETO for two years as a neuropsychiatrist in the medical corps of the army.

FOREIGN

Paratyphoid Outbreak.—An outbreak of paratyphoid fever in a number of communities north of Wiesbaden, Germany, was reported July 3 from the office of the chief surgeon, U. S. Army Headquarters in Berlin, according to the Associated Press. Between 600 and 1,000 cases have been reported and the outbreak was believed spreading. It is said that locally produced milk was believed to be the source of infection.

Tuberculosis Increase in Germany.—According to the monthly report of General Lucius D. Clay, tuberculosis has increased more than 50 per cent in the American zone in Germany in the past year. About 14,500 patients with open tuberculosis have not been hospitalized because of lack of facilities. General Clay reports that the weekly average of new cases has increased from 923 in March to 1,259 in May. The known cases of active tuberculosis of the lung and larynx under medical supervision increased from 93,821 in July last year to 121,842 in April 1947. Of these the report said 35,539 were classed as open infectious cases. Slightly more than 21,000 beds are available for isolation in treatment of tuberculosis patients, the report said.

GENERAL

International Conference of Physicians.—The Royal College of Physicians of London is sponsoring an International Conference of Physicians September 8-13 in London. The scientific program, comprising nine sections, will be presented by authorities in the various specialties from Britain, the United States, Sweden, France, Switzerland, Norway, Denmark, the Netherlands, Belgium and Czechoslovakia. The speakers from the United States will be Dr. Helen B. Taussig, Baltimore, and Dr. Frank N. Wilson, Ann Arbor, before the section on cardiology; Dr. Franz J. Kallmann, New York, before the section on psychiatry, and Dr. John B. Grant, New York, before the section on social medicine. Admission to the conference is by invitation. Application must be made to the organizing secretary, Dr. Gordon B. Mitchell-Heggs, Royal College of Physicians, Pall Mall East, London, S. W. 1.

Resolution on Training in Anesthesiology.—The board of directors of the American Society of Anesthesiologists, Inc., June 11 in Atlantic City, adopted a resolution recommending (1) the establishment of departments of anesthesiology in all medical schools and hospitals under the direction of a doctor of medicine actively engaged in the practice of anesthesiology and (2) that the department of anesthesiology bear the same relationship to the medical school and/or hospital that is borne by other medical departments of the institution. The society also stated its disapproval of (1) the training of persons other than doctors of medicine in anesthesiology for the assumption of responsibility in the care of patients where it may be necessary to exercise medical judgment and particularly of the issuance of certificates for such training by its members and (2) the existence of departments of anesthesiology in hospitals and/or medical schools under the direction of persons other than doctors of medicine or under the nominal direction of doctors of medicine not actively engaged in the practice of anesthesiology.

American Congress of Physical Medicine.—The twenty-fifth annual scientific session and instruction course of the American Congress of Physical Medicine will be held September 2-6 at the Hotel Radisson, Minneapolis. Among many others, the following physicians will address the scientific sessions:

Khalil G. Wakim, Rochester, Minn., The Effects of Artificial Fever on the Circulation in Man.
Frederick A. Jostes, St. Louis, Back Manipulations.
Daniel J. Leithauser, Detroit, Early Ambulation and Related Procedures in Surgery.
James B. Mennell, London, England, Manipulation of the Joints of the Upper Extremity.
Frederic T. Jung, Chicago, Physical Physiology as a Basis for Physical Medicine.
Carl M. Peterson, Chicago, Physical Medicine in Industrial Insurance Practice.
Hart E. Van Riper, New York, A Challenge to Physical Medicine.
Robert E. Priest, Minneapolis, Results of Tracheotomy in Bulbar Poliomyelitis.
Abe B. Baker, Minneapolis, Pathology of Changes in Bulbar Poliomyelitis.

In addition to the scientific sessions the annual instruction courses will be held September 2-5 and will be open to physicians and therapists registered with the American Registry of Physical Therapy Technicians. For further information address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2.

Admiral McIntire to Head Red Cross Blood Program.—Vice Admiral Ross T. McIntire, formerly surgeon general of the navy, has been named director of the new national blood program of the American Red Cross, which contemplates providing blood and its derivatives without cost to the entire nation. The blood program, patterned on methods employed during the war to procure blood donations for the armed forces, was approved by the Red Cross board of governors at a meeting in Cleveland in June. The program is being undertaken in direct response to the need of the medical profession for blood in saving lives as well as in the treatment and prevention of disease. The Red Cross plans call for the collection of blood at strategic centers throughout the country as well as by mobile units operating in rural areas. At the program peak an estimated 3,000,700 blood donations will be required annually. The five operations in connection with the blood program are (1) collecting blood, (2) processing it for use as whole blood and blood derivatives, including packing and storage, (3) distributing the blood and blood products, (4) making blood available for continuous research and investigation and (5) maintaining the high standards set in this field. During the first year of operation the Red Cross contemplates the establishment of twenty to twenty-five centers. The program will be financed through contributions made by the American people. It is estimated that from three to five years will be required before it is in full operation. Cost of the operation of the centers will be shared on an equitable basis between the national organization and the chapters.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

	Week Ended			Total to		Total *	
Division and State	July 19, 1947	July 20, 1946	Median, 1942-1946	July 19, 1947	July 20, 1946	March 16-July 19, 1947	March 17-July 20, 1946
New England:							
Maine	0	0	1	7	3	4	3
New Hampshire	0	12	3	5	19	1	18
Vermont	0	2	2	8	9	0	5
Massachusetts	1	1	3	16	8	9	4
Rhode Island	6	0	0	13	0	12	0
Connecticut	1	4	3	10	23	7	15
Middle Atlantic:							
New York	13	22	22	110	150	74	117
New Jersey	0	8	7	22	35	16	29
Pennsylvania	12	9	9	40	42	26	30
East North Central:							
Ohio	13	13	8	46	73	36	58
Indiana	2	5	4	25	26	9	21
Illinois	11	42	12	69	144	47	136
Michigan	3	7	7	43	34	19	26
Wisconsin	2	4	1	26	24	2	11
West North Central:							
Minnesota	5	97	0	35	178	22	177
Iowa	5	13	1	25	56	17	47
Missouri	4	34	4	33	83	23	76
North Dakota	0	3	1	20	7	15	7
South Dakota	0	11	0	2	19	0	19
Nebraska	1	20	1	33†	39	26	38
Kansas	3	35	7	23	90	5	86
South Atlantic:							
Delaware	0	0	0	1	1	1	1
Maryland	3	3	3	15	11	9	9
District of Columbia	0	0	0	3	2	1	1
Virginia	3	4	4	26	17	16	11
West Virginia	1	4	2	7	13	3	10
North Carolina	3	3	3	29	41	14	34
South Carolina	2	0	3	8	14	7	11
Georgia	2	3	4	26	51	19	43
Florida	2	24	2	53	362	28	313
East South Central:							
Kentucky	0	7	7	15	36	14	33
Tennessee	6	0	1	24	23	12	14
Alabama	1	33	3	24	169	11	166
Mississippi	0	19	5	22	70	5	53
West South Central:							
Arkansas	3	15	6	25	73	15	61
Louisiana	1	27	5	35	131	17	112
Oklahoma	0	6	6	21	70	10	64
Texas	9	61	61	87	452	62	424
Mountain:							
Montana	0	2	0	4	32	2	16
Idaho	10	1	0	25	2	15	2
Wyoming	0	8	0	6	10	3	9
Colorado	1	43	2	19	178	14	177
New Mexico	0	11	1	6	28	3	27
Arizona	0	9	0	12	20	9	17
Utah	0	0	0	6	13	1	7
Nevada	0	0	0	0	0	0	0
Pacific:							
Washington	0	2	1	28	65	20	32
Oregon	4	1	3	14	11	9	7
California	24	38	25	423	299	274	212
Total	157	666	...	1,575†	3,256†	964	2,789
Median, 1942-1946	...	...	369	2,048		1,653	

* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).

† Figures changed by corrected reports.

CORRECTION

Discussion at National Conference on Rural Health.—In the proceedings of the National Conference on Rural Health published in The Journal March 22, page 862, the discussion credited to Mr. Graham L. Davis, Michigan, should have been credited to Mr. Michael M. Davis, New York City.

Marriages

Allan Horace Warner, Woodside, N. Y., to Miss Tonya Jetti Morgenstern at Brooklyn April 20.

Neil Esposito, Brooklyn to Miss Regina F. Van Guilder of Rutland, Vt., in Passaic, N. J., April 12.

John W. Ketchersid, Ardmore, Okla., to Mrs. Mabel D. Haire at Springtown, Texas, May 14.

Deaths

Warren Beagle Davis ⊕ Philadelphia; born in Jessamine County, Ky., Sept. 6, 1881; Jefferson Medical College of Philadelphia, 1910; specialist certified by the American Board of Otolaryngology; member of the founders group of the American Board of Plastic Surgery; clinical professor of plastic and reconstructive surgery at his alma mater; member of the American Society of Plastic and Reconstructive Surgery, serving as a member of the board and in 1936-1937 as president; fellow of the American College of Surgeons, College of Physicians of Philadelphia, Academy of Surgery of Philadelphia, American Academy of Ophthalmology and Otolaryngology and the American Laryngological Association; member of the American Association of Anatomists and the Association of Military Surgeons of the United States; during World War I served on the medical advisory board of the War Department for Pennsylvania and later as captain in the medical corps of the U. S. Army, where he had been in charge of the school of maxillofacial surgery at Camp Greenleaf, Fort Oglethorpe, Ga.; during World War II served as a member of the National Faculty of Plastic and Maxillofacial Surgery, appointed by the Surgeon General; on the staffs of the Jefferson and Frankford hospitals and the Kensington Hospital for Women; in 1938 received an honorary degree of doctor of science from Georgetown College, Georgetown, Ky.; in 1942 president of the alumni association of Jefferson Medical College; since 1941 member of the state board of plastic surgery, commonwealth of Pennsylvania; editor of *Plastic and Reconstructive Surgery;* died July 7, aged 65, of hypertensive cardiovascular disease.

Mathew Aaron Reasoner ⊕ Colonel, U. S. Army, retired, Alton, Ill.; born in New London, Iowa, Nov. 1, 1875; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; Army Medical School in 1906, Army Industrial College in 1929 and the Medical Field Service School, Advanced Course, in 1930; served as physician for the Mexican Central Railroad; entered the medical corps of the U. S. Army as a first lieutenant in 1906; promoted through the various grades to that of colonel in 1932; retired Nov. 30, 1939; during World War I served overseas and with the Army of Occupation; served as chief surgeon in the department of the Philippines and had been corps area surgeon for the Sixth Corps Area in Chicago; assistant professor, Army Medical School, from 1914 to 1917; during World War II recalled to active duty and assigned as professor of military science and tactics at St. Louis University School of Medicine, where he became professor emeritus in 1946 and where he served in the department of public health; fellow and formerly member of the board of governors of the American College of Surgeons; died in St. Joseph's Hospital June 20, aged 71, of cerebral hemorrhage.

Harry Hampton Donnally ⊕ Washington, D. C.; born in Georgetown, Ky., Sept. 4, 1877; Columbian University Medical Department, Washington, D. C., 1903; for many years professor and executive officer, department of pediatrics, at George Washington University School of Medicine, where he had been professor emeritus of pediatrics since 1943; specialist certified by the American Board of Pediatrics; fellow of the American Academy of Pediatrics serving as state chairman for the District of Columbia and the American Academy of Allergy; past president of the Society for the Study of Asthma and Allied Conditions; member of the Washington Academy of Medicine, the Clinico-Pathological Society and the George Washington Medical Society; for many years a member of the staff of the Children's Hospital, where he was a founder and director of the allergy clinic; attending physician for the Columbia Institution for the Deaf for many years; consulting pediatrician for Columbia Hospital, Gallinger Municipal Hospital and Glenn Dale (Md.) Sanatorium; died in Baltimore May 23, aged 69, of pneumonia.

Clarence Edward Skinner ⊕ Darien, Conn.; born in New Haven, Conn., June 8, 1868; Yale University School of Medicine, New Haven, 1891; charter member and formerly vice president of the American Roentgen Ray Society; fellow of the New York Academy of Medicine; at one time physician in charge of the Newhope Private Sanitarium in New Haven, where he had been a director; secretary of the board of directors and medical superintendent of the Elm City Private Hospital; served as medical director of the Postal Life Insurance Company of New York and of the eastern division of the Western Union Life Insurance Company of Spokane, Wash., with headquarters in New York; for many years medical examiner in chief and consultant at the home office of the New York Life Insurance Company; died April 24, aged 78, of coronary occlusion.

Archie Marvin Roberts ⊕ Los Angeles; born in Brandon, Texas, Aug. 8, 1902; Stanford University School of Medicine, San Francisco, 1929; assistant professor of medicine at the University of Southern California School of Medicine; specialist certified by the American Board of Internal Medicine; fellow and life member of the American College of Physicians; member of numerous societies; president of the Los Angeles Heart Association; chairman of the heart division, advisory committee of the Los Angeles Tuberculosis and Health Association; attending physician at the Los Angeles County Hospital, general staff member of the Good Samaritan Hospital and associate staff member at St. Vincent's Hospital; died April 1, aged 44, of coronary disease.

Frederick Wooten Wilkerson ⊕ Montgomery, Ala.; born in Montgomery, Ala., Aug. 19, 1885; Columbia University College of Physicians and Surgeons, New York, 1909; specialist certified by the American Board of Internal Medicine; fellow and governor for many years of the American College of Physicians; member of the House of Delegates of the American Medical Association in 1920; served during World War I; past president of the Medical Association of the State of Alabama; member of the American Heart Association, Southern Medical Association and the Southern Interurban Clinical Club; on the staff of St. Margaret's Hospital; died April 24, aged 61, of hypertensive cardiovascular disease.

Charles Alford Maghy, San Diego, Cal.; born in Lucan, Ont., July 30, 1884; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the American Medical Association, American Academy of Ophthalmology and Otolaryngology, Pacific Coast Oto-Ophthalmological Society, Oxford Ophthalmological Congress and the Ophthalmological Society of England, Ireland and Scotland; formerly associate professor of ophthalmology at his alma mater; specialist certified by the American Board of Ophthalmology; on the staff of the Mercy Hospital, where he died April 27, aged 62, of coronary embolism.

Henry John Storrs ⊕ St. Louis; born in 1877; Johns Hopkins University School of Medicine, Baltimore, 1904; assistant professor of clinical gynecology and obstetrics at St. Louis University School of Medicine, where he had formerly been instructor and senior instructor in gynecology and obstetrics; instructor in obstetrics at his alma mater from 1907 to 1909; instructor in obstetrics and gynecology at the Washington University School of Medicine in St. Louis from 1910 to 1916; for many years on the staff of the Maternity Hospital; served on the staffs of St. Luke's and Bethesda General hospitals; died in West Chester, Pa., April 21, aged 70, of coronary thrombosis.

George Howitt Weaver ⊕ Wilmette, Ill.; born at Sussex, Wis., Oct. 2, 1866; Rush Medical College, Chicago, 1889; formerly professor of pathology at his alma mater and at the Northwestern University Woman's Medical School in Chicago; past president of the Society of Medical History of Chicago; fellow of the Association of American Physicians; member of the American Association of Pathologists and Bacteriologists and the Chicago Pathological Society; for many years on the staffs of the Memorial Institute for Infectious Diseases and the Cook County Hospital; died in Evanston April 19, aged 80, of perforated duodenal ulcer with peritonitis.

Arthur Morris Zinkhan ⊕ Washington, D. C.; born in 1890; Georgetown University School of Medicine, Washington, D. C., 1912; specialist certified by the American Board of Otolaryngology; formerly associate professor of otolaryngology at his alma mater; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; served in the Russian army and later in the U. S. Army during World War I; on the staff of the Episcopal Eye, Ear and Throat Hospital; died April 30, aged 56, of coronary thrombosis.

Frances Fenton Cattell Ancell, Tujunga, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1896; for many years a medical missionary in China; died April 13, aged 80, of carcinoma of the rectum and coronary sclerosis.

Benjamin F. Brandt ⊕ Cappeln, Mo.; Washington University School of Medicine, St. Louis, 1908; died April 29, aged 65, of coronary occlusion.

Nathan Bronfeld, Los Angeles; Loyola University School of Medicine, Chicago, 1916; member of the American Medical Association; died April 10, aged 62, of coronary sclerosis.

Joel Daniel Brown, Upper Darby, Pa.; Jefferson Medical College of Philadelphia, 1904; died February 3, aged 68, of bronchiectasis.

Ralph Alonzo Bunn, Dayton, Ohio; Miami Medical College, Cincinnati, 1900; died in Clearwater, Fla., April 14, aged 70, of coronary occlusion.

James M. Campbell, Goldthwaite, Texas; University of Texas School of Medicine, Galveston, 1896; member of the American Medical Association; vice president of the State Medical Association of Texas; past president of the Brown-Comanche-Mills-San Saba Counties Medical Society; served on the local Selective Service board during World War I and II; for many years surgeon for the Santa Fe Railway; died March 24, aged 73, of carcinoma.

Bertram Horace Caswell ✠ Somerville, Mass.; Tufts College Medical School, Boston, 1903; member of the New England Otological and Laryngological Society; served during World War I; served on the staffs of St. Elizabeth's and Massachusetts General hospitals in Boston; died in the Veterans Administration Hospital in Boston April 14, aged 72, of cerebral hemorrhage.

Gerritt Cotts ✠ Chicago; Rush Medical College, Chicago, 1921; fellow of the American College of Surgeons; on the staffs of the Augustana and Ravenswood hospitals, where he died May 13, aged 58, of heart disease.

Leo Allen Dermody, Omaha; John A. Creighton Medical College, Omaha, 1908; died April 5, aged 63.

George S. Dowell ✠ Braymer, Mo.; University Medical College of Kansas City, 1900; past president of the Caldwell-Livingston Counties Medical Society; died April 22, aged 71, of cerebral thrombosis.

Edward Morris Fahnestock ✠ Gulfport, Miss.; Louisville (Ky.) Medical College, 1897; served as county physician; killed April 2, aged 75, when the automobile in which he was driving was struck by a train.

Madison Aaron Furrh ✠ Major, U. S. Army, retired, Elysian Fields, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1935; interned at the Southern Baptist Hospital in New Orleans; entered the medical corps of the U. S. Army in November 1939; promoted to captain in November 1942; served during World War II; retired for disability in line of duty May 31, 1944 with the rank of major; killed in an automobile accident near Prescott, Ariz., March 18, 1946, aged 36.

Francis Ward Glann, Climbing Hill, Iowa; Sioux City College of Medicine, 1898; died April 20, aged 85, of senility.

John Dryer Green ✠ McPherson, Kan.; University of Nebraska College of Medicine, Omaha, 1931; medical missionary to China under the Free Methodist Church in charge of the Grinnell Memorial Hospital, Kihsien, Honan Province, China, from 1932 to 1938; died May 11, aged 44, of hypertension and nephritis.

Vivian Carsdale Hamilton, Oakland, Calif.; College of Medical Evangelists, Los Angeles, 1924; died April 15, aged 56, of a disease causing generalized adenopathy and obstruction of the lymph ducts.

Franklin Pierce Hannon, Rochester, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889; served during World War I; died in the Veterans Administration Hospital in Bath April 6, aged 81, of lobar pneumonia.

Ralph Emerson Henry ✠ Lieutenant Colonel, U. S. Army, retired, De Land, Fla.; University of Wooster Medical Department, Cleveland, 1910; U. S. Army Medical School in 1924; served during World War I; entered the medical corps of the U. S. Army with the rank of captain on July 1, 1920; retired with the rank of lieutenant colonel on Sept. 30, 1937 for disability in line of duty; died March 15, aged 61, of coronary thrombosis.

Carl M. Johnson ✠ Dawson, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1910; councilor of the Third District of the Minnesota State Medical Association; superintendent and director of the Dawson Hospital; died recently, aged 64.

Braxton Bynum Lloyd, Chapel Hill, N. C.; University of North Carolina School of Medicine, Raleigh, 1909; served as member of the board of directors of the Bank of Chapel Hill for many years; formerly mayor of Carrboro; died March 20, aged 60.

Ora Lee McCay, Romney, Ind.; Medical College of Indiana, Indianapolis, 1904; member of the American Medical Association; past president of the Tippecanoe County Medical Society; formerly county health commissioner; served during World War I; major, medical reserve corps, not on active duty; affiliated with the Home Hospital in Lafayette; died April 17, aged 67, of hypostatic pneumonia, chronic myocarditis and nephritis.

Alvin Oren McClelland, Youngstown, Ohio; University of Pittsburgh School of Medicine, 1894; died in the Mount Sinai Hospital in Cleveland March 27, aged 77, of prostatic hypertrophy.

Clara Louise McCord, Philadelphia; Maryland Medical College, Baltimore, 1913; died February 8, aged 61, of coronary occlusion.

Clyde A. Medlar, Verdon, Neb.; Northwestern University Medical School, Chicago, 1905; past president of the Richardson County Medical Society; served on the school board and as mayor; affiliated with Our Lady of Perpetual Help Hospital; died in Omaha April 1, aged 68, of coronary disease.

John Joseph Melvin ✠ Oakland, Calif.; Creighton University School of Medicine, Omaha, 1927; died April 6, aged 45, of myocardial infarction.

Frank John Miller, Pineville, Va.; University of Vermont College of Medicine, Burlington, 1894; member of the American Medical Association; affiliated with the Rockingham Memorial Hospital in Harrisburg, where he died April 13, aged 78, of carcinoma of the head of the pancreas.

Lewis Hitchner Miller, Woodstown, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the American Medical Association; on the staff of the Salem County Memorial Hospital, Salem; died April 8, aged 78, of coronary disease.

James Liguori Moriarty ✠ Milford, Conn.; Harvard Medical School, Boston, 1896; fellow of the American College of Surgeons; served during World War I; on the staffs of St. Mary's and Waterbury hospitals in Waterbury; died April 3, aged 75, of chronic myocarditis.

Joseph Henry Myers, Jackson, Mich.; Homeopathic Hospital College, Cleveland, 1893; died in Philadelphia April 15, aged 77, of coronary thrombosis.

James Donaldson Parker ✠ Fayette, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; past president of the Fayette County Medical Society; died April 18, aged 79, of coronary thrombosis.

Charles Frederick Pettibone, Indiana, Pa.; Jefferson Medical College of Philadelphia, 1889; died February 7, aged 81, of mesenteric thrombosis.

Ray Emmett Alfred Pomeroy ✠ Medical Director, Captain, U. S. Navy, Washington, D. C.; University of Oregon Medical School, Portland, 1916; U. S. Naval Medical School, 1925; fellow of the American College of Surgeons; entered the U. S. Navy on Jan. 28, 1922; died Nov. 4, 1946, aged 52, of coronary thrombosis.

John Purdy, Philadelphia; Jefferson Medical College of Philadelphia, 1896; served during World War I; died in the U. S. Naval Hospital February 11, aged 76, of coronary sclerosis and bronchopneumonia.

William Perry Reaves, Greensboro, N. C.; University of the South Medical Department, Sewanee, Tenn., 1903; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; died in Winston-Salem, April 2, aged 71, of cardiovascular renal disease.

Ernest Slemmons Reedy ✠ Seattle; Marion-Sims College of Medicine, St. Louis, 1898; served during World War I; on the staffs of the Doctors and Harborview hospitals; died April 9, aged 75, of dissecting aneurysm of the aorta.

Jesse Lilly Saddler, Lagrange, Ohio; Cleveland Homeopathic Medical College, 1905; member of the American Medical Association; served during World War I; formerly mayor of Bay Village; treasurer of Lagrange; served on the staff of the Memorial Hospital in Elyria; died April 9, aged 72, of lobar pneumonia.

Otho Daniel Schaul, Philadelphia; Jefferson Medical College of Philadelphia, 1892; died February 4, aged 78, of intestinal obstruction.

Charles Cicero Shaw, Oklahoma City; Eclectic Medical University, Kansas City, Mo., 1905; Kansas City College of Medicine and Surgery, 1916; also a graduate in law; formerly state senator; served overseas during World War I; died April 3, aged 69, of pneumonia.

John Edward Smaltz ✠ Media, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1929; served overseas during World War II; affiliated with the Graduate Hospital of the University of Pennsylvania in Philadelphia, where he had been connected with the Presbyterian and Methodist hospitals; on the staffs of the Media (Pa.) Hospital and the Chester and Crozer hospitals in Chester; died April 18, aged 47.

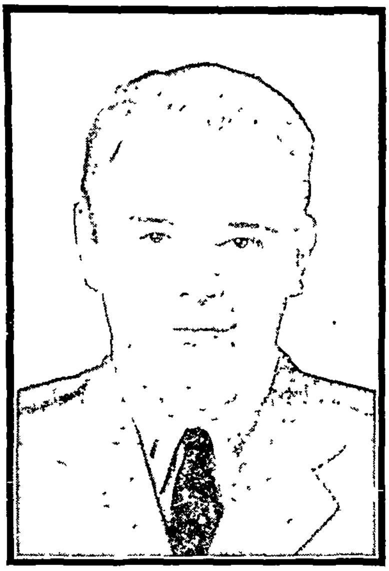
Erwin David Spiegl, Lynn, Mass.; Deutsche Universitat Medizinische Fakultat, Prague, Czechoslovakia, 1928; member of the American Medical Association; on the staff of the Lynn (Mass.) Hospital and the Beth Israel Hospital in Boston, where he died April 6, aged 45, of acute myocardial infarction.

Archibald Redd Stone ⊕ Columbus, Ohio; Washington University School of Medicine, St. Louis, 1909; served during World War I; medical director and member of the board of directors for the Midland Mutual Life Insurance Company; died April 13, aged 60, of coronary thrombosis.

Arthur Ernest Strong, Altadena, Calif.; Syracuse University College of Medicine, 1898; served during World War I; formerly health officer of Mount Vernon, N. Y.; at one time on the staff of the Norwalk (Calif.) State Hospital; died April 5, aged 72, of bronchopneumonia.

Gilbert Bernard Tepper, Los Angeles; University of Illinois College of Medicine, Chicago, 1927; on the staff of the Queen of Angels Hospital, where he died April 4, aged 43, of heart disease.

Frank Adelbert Tinker, Lapeer, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; member of the American Medical Association; health officer; past president of the Lapeer County Medical Society; served as mayor, on the school board and as alderman; died April 8, aged 87, of pneumonia.



Lieut. (jg) Robert G. Rickert
(MC), U. S. N. R., 1915-1945

Capt. Ralph William Snodgrass
M. C., A. U. S., 1905-1946

Lieut. Charles G. Butler
(MC), U. S. N., 1913-1945

Albert Roling Tucker, Manistique, Mich.; Michigan College of Medicine and Surgery, Detroit, 1899; member of the school board; served during World War I; died April 1, aged 70, of heart disease.

Walter Jabez Weiser, Marion, Ohio; Eclectic Medical Institute, Cincinnati, 1894; served as county coroner and city health commissioner; served during World War I; died April 24, aged 76, of cerebral hemorrhage.

John Latham Wethered, Laurel, Md.; University of Pennsylvania Department of Medicine, Philadelphia, 1890; member of the American Medical Association; resident physician at the Laurel Sanitarium, where he died April 3, aged 79, of cerebral hemorrhage.

Robert William Wilcox ⊕ Seal Beach, Calif.; Stanford University School of Medicine, San Francisco, 1917; fellow of the American College of Surgeons; served during World War I; on the staffs of the Seaside and St. Mary's hospitals in Long Beach; died April 6, aged 56, of coronary occlusion.

Arthur John Wilkinson, Camarillo, Calif.; Detroit College of Medicine, 1901; veteran of the Spanish-American War and World War I; affiliated with the Camarillo State Hospital; died in the Mercy Hospital, San Diego, April 9, aged 68, of adenocarcinoma of the stomach with metastasis.

John Roy Williams, Palo Alto, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; served during World War I and later as surgeon in the U. S. Public Health Service; died April 15, aged 70, of coronary thrombosis

Walter Scott Wood, Trimble, Mo ; Marion-Sims College of Medicine, St. Louis, 1896; member of the American Medical Association; died March 31, aged 75, of arteriosclerosis.

Mordecai A. Worsham, Centerville, Ark.; Memphis (Tenn) Hospital Medical College, 1883; died in Wichita, Kan., April 6, aged 89, of arteriosclerosis.

KILLED IN ACTION

Robert Garfield Rickert, Ann Arbor, Mich ; University of Michigan Medical School, Ann Arbor, 1939; served an internship and residency at the Henry Ford Hospital in Detroit; at one time affiliated with the Veterans Administration in Dearborn; began active duty as a lieutenant (jg) in the medical corps of the U. S. Naval Reserve in August 1944; medical officer aboard the *Terror;* killed in action May 1, 1945, during the Okinawa campaign, aged 30.

Ralph William Snodgrass, Des Moines, Iowa; Rush Medical College, Chicago, 1932; interned at St. Luke's Hospital in Kansas City, Mo., and at St. Louis Maternity Hospital in St. Louis, where he also served a residency; served a residency at the Barnes Hospital in St. Louis; began active duty as a captain in the medical corps, Army of the United States, on Aug. 31, 1942; reported missing July 2, 1944 while en route to the Asiatic theater after the sinking of the *Jean Nicollet,* a liberty ship in the Indian Ocean; according to the War Department, presumptive date of death, as required by law, is Dec. 18, 1946, aged 39

Charles Gleason Butler ⊕ Lieutenant, U. S. Navy, Los Angeles; University of Southern California School of Medicine, Los Angeles, 1940; interned at the U. S. Naval Hospital in San Diego; entered the U. S. Navy in July 1940; assigned to the Asiatic Fleet; lost South of Java; presumed dead Nov. 25, 1945, aged 32, by the U. S. Navy Department.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 28, 1947.

The Protection of Workers Against Radioactive Substances

New rules for the protection of workers in radioactive substances are announced by the minister of labor. All persons working with or near luminous compounds must be examined within seven days of starting work, and thereafter at intervals of not more than one month. A health register to include all workers must be kept. Those engaged in the manipulation of luminous compounds must wear photographic film for one week in every three months. This is to check the sufficiency of other precautions, which include the prohibition of more than forty-eight hours of work a week, and provision for three months in other employment after each full year's employment on processing. Measures are also laid down for keeping the air and all surfaces free from luminous compounds and for protection by special clothing and by screening.

Streptomycin Treatment of Tuberculous Meningitis

In the hospitals there is a much greater demand for streptomycin for the treatment of tuberculous meningitis than the supply of the drug. This is not due to the belief that its value has been proved but to the fact that there is no other remedy for this hopeless disease. At first all supplies came from the United States, but three British firms have set up the complex plant required for its production. By next spring these hope to produce about 250 Gm. a month. As 350 Gm. is necessary for the treatment of 1 case, the British output can play little part in the treatment of the 1,500 to 2,000 cases which occur annually. In the face of this shortage the Medical Research Council has decided that all streptomycin reaching this country must be passed through its hands for the use of research workers. It has set up special units for streptomycin treatment at the Hospital for Sick Children, Great Ormond Street, Hammersmith Hospital, Guy's Hospital, the National Hospital for Nervous Diseases, Alder Ley Hospital, Liverpool, and the Royal Hospital for Sick Children, Glasgow. At these hospitals selected cases, mostly of tuberculous meningitis, are being treated under strictly controlled conditions.

A New Classification of Tuberculosis

The recommendations of the Joint Tuberculosis Council for the revision of the classification and terms to be used in annual returns have been adopted by the minister of health. Tuberculous patients will be divided into two classes, A and B, according to whether tubercle bacilli have not or have been recovered. Patients may be transferred at any time from class A to class B. But those from whom tubercle bacilli have not been recovered within the first eight weeks of observation should be placed in class A. Single positive bacteriologic reports, unconfirmed by further search and unsupported by clinical or x-ray evidence of tuberculosis, may be ignored.

Respiratory cases are to be further subdivided into three groups: group 1, in which constitutional disturbance is slight, and there are signs of x-ray changes; group 3, in which there is profound systemic disturbance or constitutional deterioration, and pronounced impairment of function; and group 2, which includes all cases that cannot be placed in groups 1 or 3.

An uncomplicated pleural effusion for which no other cause can be found should be regarded as tuberculous, and the case placed in group 1 of class A or B, according to the bacteriologic report on the fluid.

PARIS

(From Our Regular Correspondent)

July 13, 1947.

Measures Taken Against Quack Medicine

In view of the lately increased diffusion among the public of various treatments, often detrimental to public health and escaping the control of qualified scientific societies, the director for social hygiene has drawn up a report to the Ministry for Public Health recommending the creation of a consultative commission composed of selected and qualified members and of representatives of scientific organizations which would be entrusted with the study of those remedies.

The minister for public health has applied to the National Academy of Medicine for collaboration, and the latter has appointed a special commission, called the Quack Commission, on behalf of which at a recent meeting, Professor Leroux delivered a statement of the question. After a discussion to which, among others, Professors Dujarric de la Rivière, Bezançon, Brouardel and Rist took part, the academy decided on a course of action. It has agreed to depute a representative to the commission established by the minister which shall also have to deal with remedies which, though not being officially recognized, have nevertheless certain useful therapeutic properties. On the other hand, the academy has emphasized that, as formerly, it retains its entire liberty of studying by itself all questions concerning quack medicine, as it has done lately as regards cancer and tuberculosis. It has decided to exert a direct immediate action against quack medicine by means of a careful supervision of all communications and, as regards the public, by contributing to conferences and lectures and to radio and film propaganda; as regards the medical body, by contributing to conferences for doctors aiming to keep them informed on little known remedies. The "New Therapeutics Commission," lately established in the academy, will also be rendered more efficient. This commission will have to reply to all queries from doctors concerning remedies. These replies will remain confidential. Besides this direct action, the academy will pursue a lengthy work, which consists in preparing, in collaboration with the Ministries of Justice and for Public Health, special laws on this subject. In the meantime the Consultative Commission to the Ministry for Public Health has been created.

Precise Endobronchial Penicillin Therapy of Lung Abscesses

Penicillin, intramuscularly administered, has not given satisfactory results in abscesses of the lung and above all does not take the place of surgical intervention. Charles Mattei M. Recordier, M. Tristani, H. Metras and A. Barbe of Marseilles have succeeded in treating clearly delimited abscesses of the lung with their method of endobronchial instillations of penicillin.

The technic, simple and always without bronchoscopy, is as follows: After a good local anesthesia with pontocaine, the authors direct, under screen control, a special india rubber sound of various curvatures, opaque to rays, in the abscess region. Once the sound is placed, the patient is extended in a position sloping downward with respect to the part to be subjected to instillation; then a syringe filled with 50,000 or 100,000 Oxford units diluted respectively with 10 or 20 cc. of serum, kept tepid at about 25 degrees, is connected to it. Those instillations are repeated every other day except in the presence of abundant hemoptysis. Treatment can be effective with four instillations of 50,000 or 100,000 Oxford units, but as a rule eight to twelve are necessary. By means of iodized oil the authors verify the precision of the instillations at the beginning of the treatment and after its completion. They emphasize that neither the age of the abscess nor the doses employed are important, but that the zonal location, determining the route of endobronchial access, is the important factor. The authors have set forth before the National Academy of Medicine and the Medical Society of the Paris Hospitals their complete clinical and radiologic observations in 81 cases of pulmonary abscesses thus treated with great success, always without bronchoscopy and with absence of danger (2,320 instillations were performed without incident). At the same time they illustrated, by means of projections, the definition of the "frank" abscess, for which endobronchial penicillin therapy is to be applied. Among the 81 cases the authors have noted 50 clinical and radiologic cures, 16 cases of decided improvement with clinical cure but persistence of some x-ray signs, 5 cases of distinct improvement characterized by the disappearance of fetidness and the almost complete disappearance of sputum, extensive improvement of the general condition but persistence of the x-ray signs and 10 failures, 6 neoplasms, 2 polycystic lungs, 1 abscess with retractile cavity and 1 old seat of abscess on a pleura largely fused.

An Unpublished Manuscript of Claude Bernard

An unpublished manuscript of Claude Bernard, one of the founders of classic French medicine, who died seventy years ago, has been found among the documents and notes of the late Professor d'Arsonval. Its title is "Principles of Experimental Medicine." It is going to be published under the auspices of Dr. Delhure of Paris.

Compulsory Medical Examination of School Children

The Medical School Services are making preparations for the medical examination of all children attaining school age in October. This preventive examination, performed free of charge, takes the place of the Social Security System third examination. Half a million children will be examined, the first occasion of this sort in France.

ITALY

(From Our Regular Correspondent)

FLORENCE, June 12, 1947.

National Congress for Internal Medicine

At the first postwar national Congress for Internal Medicine, held in Florence at the same time as that for surgery, Professor Cesare Frugoni, director, Medical Clinic, University of Rome, paid tribute to the members who died during the war. A paper on tumors of the colon was presented by Professor Alessandrini in joint session with the Surgical Society. Professor Guido Izar of Siena presented a paper on modern conceptions of malaria. According to the speaker, malaria has been given the honors of the stage in a medical congress after fifty-six years of silence. The many famous Italian malariologists have died except for Professor Giuseppe Bastianelli, who is the chief of the National Institute for Malariology. Professor Izar said that a short time ago only three species of plasmodia were considered causative agents of malaria in man: Plasmodium vivax, Plasmodium malariae and Plasmodium falciparum. A fourth parasite was discovered, Plasmodium ovale, which is more benign. This parasite may rarely be encountered in Europe and is of less importance than in the American and African countries. Formerly it was axiomatic that the parasite transmitted by the bite of the mosquito may invade the red blood corpuscles to start the asexual cycle and that the plasmodium may survive and reproduce itself only in the red elements. Today we know that the sporozoites do not penetrate directly the red elements but that they may first invade some tissue cells, especially those of the reticuloendothelial system, starting the cycle of asexual reproduction and giving place to the merozoites, which may attack the red elements of the blood. This modern concept is important for prophylaxis and treatment of malaria because the sporozoites, the elements which may derive from them in the lymph channels and the elements of the so-called histotropic phase of the monogonic asexual cycle are refractory to the known antimalarial preparations. This fact explains the fallacy of chemical prophylaxis whether it is carried out with quinine derivatives, acridine derivatives or sulfonamides. In considering the second phase of the development of the malaria parasites following the disappearance of fever, the speaker stated that the parasites have not disappeared from the vertebrate host, for after a variable length of time (sometimes after a decade) fever may reappear and the clinical picture of malaria may be repeated. Professor Ascoli used the term "focal phase" for this period, emphasizing that the parasites have their seat in foci. Professor Izar concludes that one may accept the hypothesis that during these long latent periods the parasites may be lodged in the internal organs but not in the red blood corpuscles, although in tissue cells.

In discussing prophylaxis of the malarial infection—which must be distinguished from malarial disease—the speaker emphasized that up to now prophylaxis has been instituted on mistaken bases for which little proof has been furnished. Today we are in a position only to carry out a symptomatologic prophylaxis with regard to the course of malaria in delaying and in reducing the clinical picture by means of chemical prophylaxis. Many of those in attendance participated in the discussion.

Professors Cesare Frugeni and Coppo of Rome reported on the third subject, "epidemic hepatitis." During World War I episodes were described which today would most likely be classified as infections of epidemic hepatitis, but only the experiences in the recent war have established beyond doubt that epidemic hepatitis cannot be caused by bacteria or by any known toxins. Epidemic hepatitis may at present be considered an infectious disease caused by an ultravirus with an initial general infection which later may be localized in the liver, spontaneously contagious from man to man by direct contact with drops of saliva and of nasopharyngeal mucus. Sometimes it may spread among a group of persons by pollution of food or water with feces or urine of patients. It may also be transmitted artificially from man to man. Rise of temperature may sometimes occur unexpectedly after an incubation period of one month's duration on an average. There follows a second phase with the disappearance of fever and the occurrence of hepatocellular icterus of variable intensity, which, however, may not be obligatory. Among the symptoms are disturbances of digestion with constipation and increase in volume and in firmness of the liver; splenomegaly may be frequent. Leukopenia with lymphomonocytosis may be present. The so-called reaction of hepatic serolability may precociously be positive, while heterophil agglutination may always give negative results. The course as well as the clinical picture may be atypical.

Prognosis generally is favorable, and definite recovery with functional and anatomic restitutio ad integrum of the liver may occur in 99 per cent of the cases. Complications may occur. Rarely grave symptoms may develop which may be reversible but from which death may result with a picture of acute hepatic atrophy.

In prophylaxis, gamma globulin injections proved effective during the incubation period. The administration of convalescent serum may be associated with the risk of transmitting the same hepatitis in the form of the so-called icterus of homologous serum or posttransfusion hepatitis.

Nicotinic acid and liver extract may be useful for treatment. The patient should be placed on a liver protective diet. In cases with a protracted course and with symptoms of dangerous insufficiency of the liver, highly satisfactory results may be obtained with the administration of large quantities (10 to 12 liters in three days) of isotonic glucose solution by means of a duodenal tube. Other forms of hepatitis have been described as related to epidemic hepatitis, with which they have features in common; e. g. the considerable number of cases of hepatitis with jaundice a hundred days after transfusion of blood, serum or plasma. Cases of hepatitis after vaccination against yellow fever as after the administration of antitoxic serums represent only particular aspects of posttransfusion hepatitis, because the blood of the convalescent may be the vector of the icterogenic virus. Episodes of icterus accidentally transmitted from one person to another by means of an unsatisfactorily sterilized syringe have in addition been reported.

Professor Coppo and Professor Frugoni commented on the remarks of the discussers. With reference to the benign character of epidemic hepatitis which was questioned by some of the discussers, the speakers held that in spite of some malignant episodes the disease usually has a benign character and recovery without sequels occurs in almost every case.

The congress selected Rome for the next annual meeting and, as subjects for papers, (1) the mediastinal syndrome (in cooperation with the Italian Society of Surgery), speaker from the medical point of view, Professor Condorelli of the University of Catania; (2) encephalitis, speaker, Professor Greppi of Florence; (3) medical treatment of thyrosis, speaker, Professor Bastai of Padua.

Pasteur Celebration

Italy participated in the celebration of the fiftieth anniversary of the death of Pasteur in Paris through a delegation of scientists under the chairmanship of Professor Marotta, director general of the Superior Institute of Health. Professor Alberti reviewed the work of Professor Giuseppe Sanarelli and Professor Alessandro Salimbeni, the Italian pupils of Pasteur, the first of whom died shortly before the recent war and the second during it. The work of Professor Sanarelli is so extensive that it cannot be summarized briefly. The activities of Professor Salimbeni are closely associated with the practice of vaccination; he worked with Roux and Metchnikoff on cholera, with Calmette on plague, with Marchoux on yellow fever and spirilla and on antityphus vaccination with Widal. Other Italian pupils of Pasteur are Professors Malfitano and Stassano, while Professors Camillo Ninni and Federigo Netti have worked at the Pasteur Institute in Paris.

BARCELONA

(From Our Regular Correspondent)

June 10, 1947.

Rheumatism

Little work has been done on rheumatism within the field of internal medicine in Spain. Except for the first contributions of Professor Gregorio Marañon's school, which were stopped by the civil war, of Professor J. Cuatrecasas (now in exile) and of Dr. M. Bastos (now without a department of his own to work in, owing to political reasons), it may be said that, up to a few years ago, there was no complete rheumatologic work done in Spain. But now it has been taken up by Professor A. Pedro y Pons, professor of internal medicine at the Barcelona Faculty, and his disciple Dr. P. Barceló Torrent, head of the rheumatism clinic of that body, the first rheumatism department to be set up in Spain.

Dr. P. Barceló, who had already published a monograph in 1941 entitled Reumatismos articulares cronicos (Salvat, Barcelona), gave us another in 1945 with the title Reumatismos vertebrales (Salvat, Barcelona) in which he expounded with great clearness his personal views on rheumatic pathology. In the latter book he paid careful attention to the clinical study of the small vertebral articulations; but now he has written, jointly with the head of the radiology department of the Barcelona Faculty, Dr. J. M. Vilaseca Sabater, a further monograph devoted exclusively to this subject (Patologia de las pequeñas articulaciones inter-vertebrales: Clínica y Radiología, Salvat, 1946). Dr. Vilaseca's contribution is a model of exposition. Since the first papers of Dittmar (1931), didactic works on this subject have been very scarce. The chapters devoted to the anatomy, the x-ray observations and the pathologic systematizing of these disorders, to the uncovertebral articulations, the costovertebral and the costotransverse ones, constitute a good personal contribution.

We have to stress the greatness of the task achieved in this field at the present time by Professor Pedro y Pons's school, which led up to the recent foundation of the journal *Revista Española de Reumatismo y Enfermedades osteoarticulares* under the sponsorship of Professors Pedro y Pons, G. Marañon, J. Gibert Queralto, J. M. Vilardell, the anatomopathologist, J. Sánchez Lucas, a disciple of Aschoff, and M. Bastos Ansart. The assistant editors are Drs. P. Barcelo and J. M. Vilaseca. This review has already published comprehensive papers on senile vertebral kyphosis and osteoporosis by Dr. Pedro y Pons and the anatomic morphology of rheumatic lesions by Dr. Sánchez Lucas and has just published a paper by Dr. M. Bastos and his son Dr. Bastos Mora on an undescribed disorder of the Tarsian skeleton, a process marked by a reactional inflammation round a healthy bone fragment (which, at first, may have been an ossification nucleus detached from the astragalus or a necrotic inflammation of the spongy bone) followed by an expelling reaction in the subjacent bone. The journal is publishing two complementary monographs on ancylopoietic spondyloarthritis (October 1945) and the intervertebral disk, written jointly by some of the best specialists on rheumatism of the Barcelona school. The former contains detailed studies of 153 cases seen at the rheumatism clinic and of others seen privately by some of the writers, and in it the pathogenic concepts developed by Barcelo stand out. In the latter may be mentioned the chapter by Sánchez Lucas on the anatomopathology of the disk, the one by Bastos on the mechanopathology of the spine and the disks, in which he gives us the full fruits of his rich experience and sifted judgment; the one on radiology by Drs. Vilaseca and Vilar Bonet; that by Pedro y Pons and Barcelo on the isolated discal degeneration syndrome and a good revision of concepts by Professor Gibert Queralto on the disk in rheumatic spondylopathies.

All this work has been done by the rheumatologic school of Barcelona, where the best work on the subject is now being done in Spain. And it is to be expected that these enthusiastic collaborators will garner gratifying fruits for Spanish rheumatology, which had given but few signs of life since the days of Marañon and Cuatrecasas's early essays. Now the fight against rheumatism will be energetically undertaken and pursued with state aid, and its direction has been entrusted to other schools, which have done, notwithstanding, less valuable work than that of these men in Barcelona.

Endocarditis

Professor A. Pedro y Pons's school has also carried out some excellent investigations in the field of brucellosis, viz. "Exanthematic Mediterranean Fever," by Pedro y Pons; "Leptospirosis," by P. Farreras Valenti; "Acute Glomerulonephritis" and "Werloff's disease," by the same writer, a studious and intelligent assistant professor in the same department; "Weil's Disease," by J. Gibert Queralto, and "Nephritic Forms of Endocarditis Lenta" by Pedro y Pons.

Speaking of endocarditis, under the direction of Dr. L. Trias de Bes, the director of the Infectious Diseases Hospital at Barcelona, systematic, clinical and experimental investigative work is being carried out which is to be reported at the Spanish Cardiology Congress to be held in Barcelona next December. L. Trias de Bes, with the help of Drs. A. Foz, J. Gras Riera, L. Borras and F. Ballesta, is now examining this problem in a broad manner and his preliminary communications lead us to expect ample results of great interest. Trias de Bes has described a type of bacteremic endocarditis lenta with a positive blood culture, an almost normal plasmatic syndrome, a short clinical course and well defined features, responding well therapeutically to the indicated antibiotics; and another opposite type the blood culture of which is repeatedly negative, with an intense plasmatic syndrome, a lengthy evolution with intermittent remissions and a fatal ending, resisting all antibiotics and chemotherapeutic preparations. The plasmatic syndrome which the authors point to as a differential facet is characterized by an increase of total proteins, the inversion of the albumin-globulin quotient (which becomes almost normal during the remission phases), high Weltman reaction values, maximum flocculations in Takata's reaction and early and accentuated formaldehyde and lacto jellifications of the serum. This work of Trias de Bes and his fellow investigators, some of whom also work with Professor Pedro y Pons, has enabled them to differentiate between two types of endocarditis lenta with far different prognoses and treatments, and the data furnished are the first instalments of their interesting report. One of their advance communications has appeared in the review *Medicina Clinica,* which has just published practically the whole of the papers written in Catalonia and a large part of Spain. It is directed by Dr. Pedro y Pons, with Dr. P. Farreras Valenti as editor in chief, and may be considered the best journal published in our country, being certainly the one with the largest circulation.

BUENOS AIRES

(From Our Regular Correspondent)

July 10, 1947.

A New Pregnancy Test

A new pregnancy test in which the male toad is the reacting animal has been proposed by Dr. C. Galli-Mainini (*Sem. méd.* **54:**337 [March] 1947). The technic is simple: Ten cc. of a morning urine specimen is injected subcutaneously in the toad Bufo arenarum Hensel. After a period of two or three hours a drop of the toad's urine is obtained by means of a pipet inserted in the cloaca and is placed under the microscope. The positivity or negativity of the reaction is indicated by the presence or absence of spermatozoa in the toad's urine.

In 1929 Houssay and Lascano-Gonzalez observed that implantation of the anterior hypophysial lobe in the toad released the spermatozoa in the seminal tubes. De Robertis, Burgos and Breyter (1945) found that the Sertoli cells become swollen and vacuolized and release the spermatozoa, which pass out into the kidneys. Galli-Mainini observed that chorionic gonadotropin releases the spermatozoa, which are then easily found in the toad's urine.

As stated, the response is observed in two to three hours. Spermatozoa can be easily observed with a low power lens and without staining. Positive results were obtained only with the urine of pregnant women. Of the 485 positive reactions, 177 were made with a simultaneous Friedman test; the results coincided in 168; there were only 5 positive in the toad and only 3 in the rabbit. Of all the urines from pregnant women tested 92 per cent were positive, but the percentage is higher for the urine of the first months of pregnancy. None of the sexual or adrenal hormones or substances provoke the release of the spermatozoa. It has been obtained in some cases with rat hypophysis. The urine of patients with chorionepithelioma or an ectopic pregnancy gave a positive test. A higher percentage of positive tests were obtained with urine than with serum.

This new test has the advantage of being simple, rapid, specific and economical, as the urine and the microscopic examination do not need previous preparation and the toads need no special care; also the same animal can be used repeatedly.

BRAZIL

(From Our Regular Correspondent)

São Paulo, June 24, 1947.

Treatment of Tuberculous Meningitis with Streptomycin

Drs. Mario Mursa, João Batista dos Reis and J. Renato Woiski published recently the first report in Brazilian medical literature of a case of tuberculous meningitis in a child aged 5 years successfully treated with streptomycin. The Koch bacillus was present in the cerebrospinal fluid, and inoculation into guinea pigs was positive. Treatment was begun eight days after the onset of the meningeal signs and it lasted seventy-one days, the total dose of streptomycin given being 44,600,000 units (42,650,000 intramuscularly and 1,950,000 intrathecally, by means of lumbar and cisternal punctures). Promin was given in association with streptomycin in the final days of treatment. Drs. Mursa, Reis and Woiski believe that the results were due to streptomycin alone, which, since therapy was started, definitely improved the course of the disease. Forty days after treatment was discontinued the patient behaved normally, with no neurologic sequelae. Repeated tests of cerebrospinal fluid denoted progressive improvement, and at the end there was only lymphocytic pleocytosis (71 cells per cubic millimeter), increase of the protein content and a thin fibrinous reticulum. In spite of these good results they cannot affirm a complete recovery because the time of observation is still too short to allow a definite estimation.

Leukotomy in Treatment of Epilepsy

Soon after the cerebral leukotomy of Egas Moniz, Freeman and Watts was introduced in psychiatry as a method of treatment its application was extended to epilepsy with not very encouraging results. Dr. Mário Yahn of the Hospital de Juquery, São Paulo, chose 6 chronic epileptic patients on whom to study the effects of frontal and parietal leukotomy on the disease and secondary deviations of behavior. One patient with psychopathic personality, misconduct and hysterical and epileptic fits recovered fully after the operation. Of 2 other patients with infantile encephalopathy, hemiplegia and deviations of behavior, 1 greatly improved as to the rate of seizures, without mental changes. In the other the number of seizures was later reduced.

Of 3 other patients with essential epilepsy with deviations of behavior, 2 showed good results, and the third showed signs of aggravation. The mental state of 1 patient was improved.

Dr. Mário Yahn believes that the verified improvements do not result directly from the sectioned pathways but from a new postoperative integration. Leukotomy cannot yet be used as a routine method of treatment for epilepsy. Only in chronic and very serious cases with frequent seizures and misconduct in which shock therapy has failed should cerebral leukotomy be employed.

Cyst of the Choledochus

Dr. Erasto Gartner, professor of the Faculdade de Medicina of Curitiba, Parana, recently reported a case of cystic dilatation of the choledochus in a 14 year old patient in whom surgical exploration by a right lumbotomy showed a retroperitoneal tumor. After puncture of the cyst, from which 1,500 cc. of bile was taken, and a large incision made on its posterior wall, it was possible to observe the proximal and distal holes of the channel, resembling aneurismal sacks. The reconstruction was made by the Matas technic. The suture was made over a plummet, which was left loose in the manner of Pierre Duval, and the patient was completely cured without postoperative incidents. It is the first choledochus reconstruction made in this way. The process was called "choledochorraphy" in honor of Rudolph Matas of New Orleans. On consulting the international literature Dr. Gartner found that 183 cases have been reported.

Correspondence

CORONARY DISEASE

To the Editor:—Dr. Falk's paper on coronary disease (The Journal, June 7, p. 491) not only repeats the ancient legend that blood cholesterol is independent of dietary cholesterol intake but specifically recommends junket and eggs as daily dietary ingredients for patients with coronary disease. Falk seems not to have noted the fall in blood cholesterol reported by Kempner in 79 patients on a rice diet (the average fall was from 243 to 186 mg. per hundred cubic centimeters. *Bull. New York Acad. Med.* 22:361 [July] 1946) or the consistent slight rise in blood cholesterol noted in normal women fed four egg yolks daily (Okey, Ruth, and Stewart, Dorothy. *J. Biol. Chem.* 99:717 [Feb.] 1933).

Granting that blood cholesterol is rather stable, rising and falling slowly when diets rich in cholesterol and calories are administered or discontinued, and that going without favorite foods is to many a "fate worse than death," it must be conceded that atheromas form more slowly in races on a low cholesterol intake, that atheromas occur in fatal form precociously in those with high blood cholesterol (xanthomatosis, diabetes mellitus) and that high blood cholesterols are the rule in those who have coronary disease before 50 (Lerman, J., and White, P. D.: *J. Clin. Investigation* 25:914 [Nov.] 1946). It is also certain that ingestion of egg yolk, butter and cream furnishes calories and cholesterol in concentrated form. If a patient is concerned about duration of life, if he feels some obligation to his dependents, it would seem to be proper for him to reduce his weight to the ideal for his body build at age 20 and to avoid the substances noted as regular items of diet. No doctor should prescribe them for him.

Arguments against this view are summarized by Peters (Quantitative Clinical Chemistry, vol. 1:534-1536, Baltimore, Williams & Wilkins, 1946). These arguments are precisely the same as those which were used to destroy the theory of Villemin that tuberculosis was an infection. Not all the people heavily exposed to tuberculosis or cholesterol die of the disease; the lesions in experimental animals differ in some respects from those in man. On the other hand, no one who is not exposed to tuberculosis dies of that disease, and no one with a blood cholesterol under 150 mg. per hundred cubic centimeters is likely to die of coronary disease. Dogs, rabbits and chickens all get atheroma when the blood cholesterol is kept above 250 mg. per hundred cubic centimeters, and the higher the level the more rapidly do severe lesions develop. These lesions all resemble human atherosclerosis far more closely than Villemin's guinea pig tuberculosis resembled human phthisis.

We read today that millions are to be spent for research on heart disease, and we hope this may lead to reduction of blood cholesterol without dietary restriction. More men's lives would be saved by this than by a specific cure for cancer. Meantime, geographic pathology, clinical observation and experimental pathology have shown how atherosclerosis can be prevented, or even reversed, by dietary restriction alone. Whether this is worth while for those who live to eat is beside the point; doctors must tell their patients how to eat in order to prolong their lives.

Hypertensive people (who have five times the incidence of coronary disease of the normotensive), those with bad family records of coronary disease and those who are obese or have high blood cholesterols should be clearly informed of the advantages of a low calory diet, low in egg yolk, butter and cream. They might even be informed of the fact that on a vegetarian reducing regimen life not only will seem longer but statistically it will be longer.

William Dock, M.D., Brooklyn.

OBESITY

To the Editor:—In his paper on "Psychic Factors in the Development and Treatment of Obesity" (The Journal, February 8, p. 369) Dr. Freed laid particular stress on the etiologic importance of psychosomatic factors in the pathogenesis of obesity. In his communication April 5 (p. 1032) Dr. Freyhan emphasized the constitutional aspects. Both these factors play an essential role. After all, every case of obesity is brought about by "overfeeding," either absolutely or relatively. However, we would underestimate the complexity of the question if we believed that these two factors are sufficient to solve completely the problem of obesity (or likewise of emaciation). Even if factors such as temper, basal metabolism, alimentary extravagance, the specific dynamic effect of food and caloric consumption during and after physical exertion are properly taken into account, we are left with a number of patients whose tendency toward obesity remains unexplained. And, strangely, this is particularly true of the extreme types of obesity such as are sometimes found with pituitary tumors, tumors in the occipital fossa compressing the aqueductus cerebri and so on. Localized obesity, e. g. lipomatosis of the lower extremities in hyperthyroidism represents a special problem. Here a localized failure to combust fats in spite of a generally increased oxidation in the organism plays the decisive role (Zondek, H., and Loewy, A.: *Ztschr. f. klin. Med.* 95:282 [Nov.] 1922). This localized obesity is certainly difficult to interpret from the psychosomatic point of view. I should like to mention that form of obesity which I described about twenty years ago and designated as "water-salt obesity" (*Deutsche med. Wchnschr.* 31:1267 [July 31] 1925). In such cases water and salt retention accompanied by a tendency toward fat deposition in the tissues appears to be the essential etiologic factor. I am unaware of the incidence of this type of obesity in the United States, but in the Middle East (e. g. Palestine, Iraq, Syria, Egypt) it is widespread. This type of obesity does not react to treatment on the so-called glandular basis or to caloric restriction or to psychic approach but only to restriction of water and salt intake and to mercurial diuretics and other dehydrating measures.

Herman Zondek, Jerusalem.

MEDICAL EDUCATION IN ITALY

To the Editor: In an article by Dr. W. C. Davison (The Journal, April 6, p. 921) the condition of Italian medical education before and after the second world war was criticized. I feel it my duty to clarify the facts.

The inevitable consequences of a long war deprived us of valuable men, material and buildings. At present, two years after the end of the war, Italian universities are in financial difficulties, with a greatly increased number of students. The expenses which have been met already and which are necessary to reconstruct the damaged buildings are absolutely enormous. Replacement of equipment (instruments, reagents, animals, books) is another heavy problem. It is feared that some old universities will have to be closed for lack of funds. However, medical scientific activities have never ceased. In October 1946 the first postwar national medical meetings took place in Florence and were remarkably successful.

The results achieved in Italy in the scientific medical field are worthy of general recognition. For example, hematology is a branch of pathology which has always appealed to our research workers. The discovery of acute erythremia, the extensive study of the acute erythremic condition, of Cooley's and related syndromes and of their relationships to constitutional hyperhemolysis and hemolytic icterus with increased globular resistance, the study of bone marrow in surviving explants, the neoplastic interpretation of acute and chronic leukemias and the establishment of different characters among various types of acute monocytic leukemias represent some of the work recently done in this field.

Italian doctors are skilful in controlling the diffusion of pulmonary tuberculosis caused by the war and malnutrition. The method of so-called endocavitary aspiration for the treatment of pulmonary cavities, some types of apicoaxillary thoracoplasty and special types of extrapleural pneumothorax are recent discoveries of Italian phthisiology. Experimental and clinical tests with lipotropic agents have given excellent results in the relationship between the function of the adrenals and lipotropic action, pregnancy and hepatic steatosis due to deficiency of labile methyl groups and the lipotropic effect and functional efficiency of the liver in the hepatomegalic diabetes of the young.

The new views on an intracellular cycle of the malarial parasite (histotropic phase) have been repeatedly confirmed by the increased observations due to the diffusion of malaria as a consequence of the destruction of antimalaria wards during the war. Prominent in the field of allergic diseases in our country are the problems of histamine and artificial antihistaminic drugs.

The discovery in Italy of electric shock was an important contribution to scientific advancement in the field of psychiatry. The identification of infantile acrodynia as a syndrome due to deficiency of pyridoxine is one of our most important contributions in this branch.

A serious problem to be solved is that of Italian medical literature. Efforts must be made to have our work better known abroad.

I hope I have made clear that Italian doctors can be favorably compared to those of other European countries.

I thank the Editor for the opportunity offered me to express my opinion on the subject.

Cesare Frugoni, M.D., Rome, Italy
Head of the Department of Internal Medicine,
University of Rome; President, Italian Society
for Internal Medicine.

STREPTOMYCIN THERAPY AND EOSINOPHILIA

To the Editor:—The observation of eosinophilia in patients with tuberculosis under therapy with streptomycin in the absence of eruption is reported by Farrington and his associates in The Journal, June 21, page 682. In 9 of 14 subjects the eosinophilia first appeared during the second and third months of therapy and was not associated with symptoms or signs suggesting sensitivity to the drug. A similar phenomenon has been observed in the therapy of leprosy with streptomycin (Faget and Erickson: Use of Streptomycin in the Treatment of Leprosy: A Preliminary Report, read before the Antibiotic Study Section, U. S. Public Health Service, Washington, D. C., Feb. 1, 1947). These authors found that the peak of eosinophilia occurred during the twelfth week of treatment, following which the eosinophil count gradually dropped. Only one patient had a conspicuous skin eruption, though 3 other patients had milder attacks of dermatitis. Eosinophilia was observed in all 10 patients treated. Erickson informed me that they have observed eosinophilia in patients with leprosy for as long as five months after discontinuance of streptomycin therapy, and that all patients had normal counts prior to the treatment.

The fact that the eosinophilia appeared in some instances to rise to a peak and then to recede while therapy was continued suggests a definite effect on the infection. In experiments in which purified lipid fractions of tubercle bacilli were injected into human beings (Harrell, G. T.: *J. Clin. Investigation* **23:**943 [Nov.] 1944) the cellular reaction in tissue removed at biopsy revealed considerable numbers of eosinophils as well as polymorphonuclear neutrophils and epithelioid cells. This finding suggests a possible mechanism for the eosinophilia. If streptomycin inhibits the growth of acid fast organisms so that the immune response of the body destroys moderate numbers of Mycobacteria, the gradual destruction of the cell body would liberate these firmly bound lipids. The observation that the phosphatide and wax are biologically active, as is shown by the production of chronic wheals, would suggest that a firmly bound portion of the molecule, probably a polysaccharide, is released in the tissue and elicits the eosinophil response.

If the development of eosinophilia can be correlated with a subsequent favorable clinical response, a simple means of estimating the efficacy of streptomycin therapy will be available. It is conceivable that the absence of an eosinophil response in the second month of therapy might be indicative of the development of a drug fast strain, which could then be investigated by cultural methods. The rise and fall of reticulocytes in patients with pernicious anemia under therapy with liver is well known and represents an analogous measure of the effectiveness of therapy through a hematologic response.

George T. Harrell, M.D., Winston-Salem, N. C.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in The Journal July 26, page 1121.

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I and II.* Various centers, Sept. 15-17. *Part III.* Durham, Oct. 21-23. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Part II. *Oral.* Cleveland, Oct. 5-11. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

American Board of Dermatology and Syphilology: *Part I. Oral.* Chicago, Oct. 24-26. Final date for filing application is Aug. 1. *Part II. Written.* Various centers, Sept. 15. Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

American Board of Internal Medicine: *Oral.* Chicago, Oct. 8-10. Asst. Sec., Dr. W. A. Werrell, 1 West Main St., Madison 3.

American Board of Neurological Surgery: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

American Board of Obstetrics and Gynecology: *Part I. Written.* Various Centers, Feb. 6. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

American Board of Ophthalmology: Chicago, October 6-12. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

American Board of Orthopaedic Surgery: Part II. Chicago, Jan. 22-23. Final date for filing application is Sept. 15. Sec., Col. F. M. McKeever, 1136 W. Sixth St., Los Angeles 14.

American Board of Otolaryngology: Chicago, Oct. 7-11. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City, Ia.

American Board of Pathology: Chicago, Oct. 24-25. Final date for filing application is Sept. 15. Sec., Dr. Robert A. Moore, Euclid Ave. and Kingshighway, St. Louis 10.

American Board of Pediatrics: Dallas, Dec. 5-7. Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

American Board of Plastic Surgery: Examinations are given in April and November of each year in the home town of applicants. Applications should be sent to Sec., Dr. Louis T. Byars, 508 N. Grand Blvd., St. Louis.

American Board of Psychiatry and Neurology: *Oral.* New York, December. Final date for filing application is Sept. 15. Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S. W., Rochester, Minn.

American Board of Radiology: *Oral.* Boston, Nov. 26-30. Final date for filing application is Aug. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Avenue, S. W., Rochester, Minn.

American Board of Urology: Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Harry Culver, 1409 Willow St., Minneapolis 4.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Coroners: Validity of Statute Relating to Jurisdiction.—The plaintiff filed an action for a writ of mandamus to direct the county coroner to change his verdict in a particular case from "suicide" to "accidental death." From a judgment for the defendant, the plaintiff appealed to the court of appeals of Ohio, Cuyahoga County.

The plaintiff's husband was admitted to a hospital on Nov. 8, 1945, where he underwent surgical treatment. After the operation he was placed in a room on the fourth floor of the hospital and during the period between the 8th and 11th, and until shortly before his death, he was given several dosages of phenobarbital as part of the essential medical treatment prescribed for him. About 1:40 p. m. on Nov. 11, 1945 the body of the plaintiff's husband was found on the ground outside the hospital building, the exact manner and means by which the body got there being unknown. The coroner made a finding that the immediate cause of death was "multiple fractured ribs, internal injuries, suicide, jump from window," but the plaintiff alleges that when the coroner made this decision he was not in possession of all the facts and information relating to the death of the deceased, especially such as relate to the influence of the administration of phenobarbital as a sedative. She contends that the graded cumulative effect of the administration of phenobarbital, coupled with postoperative shock, was sufficient to cause deceased's mental processes to become impaired and that the coroner would and should have rendered a different decision as to the cause and manner of death had he been in possession of all the facts relating thereto. The coroner incorporated in his verdict, and in the death certificate filed with the registrar of vital statistics in Cleveland, his decision of suicide and the plaintiff urges that the decision is in part erroneous and that the verdict of the coroner should have been that deceased came to his death by "accidental" means.

Prior to 1945 it was thought that the jurisdiction of a coroner, under statutes existing at that time, was confined to cases where there was a "suspicion of death" by criminal means. In 1945 certain sections of the coroner act were amended so that the jurisdiction and authority of the coroner was, for the first time in the history of the state, enlarged to cover cases involving civil liability. For instance, section 2855-5 provides for cases where "any person shall die as a result of criminal or other violent means, or by casualty, or by suicide" and section 2855-7 contains the words "whether by violence to self or from any other person or persons." Section 2855-16, provides: "The cause of death, the manner and mode in which the death occurred, as delivered by the coroner and incorporated in the coroner's verdict and incorporated in the death certificate filed with the registrar of vital statistics, shall be the legally accepted manner and mode in which the death occurred and the legally accepted cause of death, unless the court of common pleas of the county in which the death occurred, after hearing, directs the coroner to change his decision as to the cause, mode and manner of death." From the plain language of this section, said the court of appeals, we conclude that the legislature intended to enlarge the jurisdiction of the coroner to cases of death where civil rights and liabilities may be involved.

It is urged by the defendant, however, that the language of section 2855-16 providing for a hearing by the court of common pleas is so incomplete, vague, indefinite and uncertain that it is impossible to determine with any reasonable degree of certainty what the legislature intended. It is then argued that, since there is no other provision to supplement section 2855-16, the deficiency is such as to render it impossible of execution and therefore void.

It is clear, said the court, that the legislature, by enacting section 2855-16, intended to clothe the court of common pleas with jurisdiction to direct the coroner to change his decision as to the cause, mode and manner of death if, in the judgment of the court, the coroner's verdict is not justified by the evidence. The serious question, however, is how, or in what manner, this legislative intent is to be effectuated under the statute as written. It will be noted that, under this and the other new sections of the General Code, there is no method prescribed as to the manner in which the decision of the coroner shall be brought before the common pleas court. There are no provisions describing the person or persons who shall or may be made parties to such action, and the section is wholly silent as to how such parties shall be brought before the court for adjudication. Furthermore there does not appear to be any other provision of law conferring jurisdiction on the court of common pleas to decide such questions either in original or review proceedings and no other statutory provision setting forth the nature of such proceeding. Continuing, the court said that there is another important question in this case, namely, whether or not there is a grant of judicial power to the coroner, a ministerial officer, to make a finding in an ex parte proceeding affecting constitutional rights in civil matters. While we are not concerned with the wisdom or policy of the legislature, said the court, we must be concerned with the constitutional rights of any persons who may be prejudiced by an ex parte finding of a ministerial officer in a proceeding in which they are not made parties and in which they are not afforded means of becoming parties for the purpose of asserting their rights.

After discussing the new provisions of the coroner's statute and considering prior Ohio cases and cases from other jurisdictions, the court concluded that the new sections were an attempt by the legislature to vest the coroner with judicial power in civil matters between private parties which is repugnant to the Ohio Constitution vesting full judicial powers in the court; that the legislature attempted to authorize the coroner to make "legally accepted findings" having the power of judicial decisions affecting civil rights in ex parte proceedings, without making adequate provisions for defining means for persons adversely affected thereby to be made parties or become parties for the purpose of asserting and protecting their rights; that the legislature attempted to vest the court of common pleas with the power to direct the coroner to change his finding in a civil matter so that it will thereafter have the force of a judicial decision without providing the method or means by which such jurisdiction shall be exercised and without providing some mode or method which will guarantee the parties their constitutional rights to have their day in court. Such a statute, said the court, is inoperative and void for uncertainty and indefiniteness, deprives a party of his fundamental rights and is violative of both the Ohio and the federal constitutions. Accordingly the judgment of the trial court in favor of the defendant was affirmed.—*State v. Gerber, Coroner, 70 N. E. (2d) 111 (Ohio, 1946).*

Medical Motion Pictures

FILM REVIEW

The Control of Voluntary Muscles (Some Principles of Kinesiology). Directed by Frederic T. Jung, Ph.D., M.D., and William H. Lazear, D.D.S. Produced in 1943 by Northwestern University Medical School. Photography by Mervin W. LaRue. 16 mm., color, silent, 575 feet (two reels). Showing time twenty-three minutes. Procurable by rental, $2, or by sale from Audio-Visual Medical Education Department, Northwestern University Medical School, 303 East Chicago Avenue, Chicago 11.

This film clearly portrays muscle action in the human body. Primary attention is given to the muscles ordinarily used in large muscle activities and those which are most often involved in therapeutic exercise. The position, shape and attachment of muscles are first illustrated by drawings and their action then demonstrated by a living model.

The film is intended as a visual teaching aid for courses in kinesiology as provided for students in physical education and physical therapy. The purpose of the film is not to provide a general overall view of the subject but rather to present some aspects of kinesiology from the standpoint of voluntary muscle control.

While it will prove most useful for students in physical education and physical therapy, it may also be of real value in stimulating interest in general courses in anatomy. The color photography is excellent.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

53:721-900 (May) 1947. Partial Index

Presidential Address: Individualism. J. H. Moore.—p. 721.
Menorrhagia Associated with Irregular Shedding of the Endometrium: Clinical and Experimental Study. E. G. Holmstrom and C. E. McLennan.—p. 727.
Physiologic Action of Human Chorionic Hormone: Production of Pseudopregnancy in Women by Chorionic Hormone. W. E. Brown and J. T. Bradbury.—p. 749.
*Combined Evipal and Scopolamine Analgesia and Cyclopropane Anesthesia in Obstetrics. H. E. Anderson.—p. 758.
Stress Incontinence in the Female. R. A. Reis and E. J. De Costa.—p. 776.
Constriction Ring Dystocia. L. Rudolph and C. Fields.—p. 796.
*Minimal Spinal Anesthesia in Vaginal Delivery: Analysis of 1,000 Consecutive Cases. J. A. Haugen and R. C. Benson.—p. 805.
Management of Delivery Following Stillbirth from Previous Dystocia. A. B. Hunt and R. W. DeVoe.—p. 812.
Blood Calcium: Normal Curve for Pregnancy. R. L. Newman.—p. 817.
Experience with Midpelvic Dystocia: Preliminary Report. W. C. Eller, W. F. Mengert, W. H. Andrew Jr. and R. J. Jennett.—p. 823.
Penicillin and Acute Puerperal Mastitis. C. P. Hodgkinson.—p. 834.
*A 55 Pound Solid Uterine Myoma. W. D. Beacham, J. A. Holmes, H. T. Beacham and others.—p. 839.
Leiomyofibroma of Uterus and Endometrial Carcinoma. R. S. Siddall.—p. 846.
Study of Interaction of Pregnancy and Hypertensive Disease. L. C. Chesley, J. E. Annitto and D. G. Jarvis.—p. 851.
Placental Metabolism of Vitamin C.: II. Histochemical Analysis. J. H. Holzaepfel and A. C. Barnes.—p. 864.
Spontaneous Annular Detachment of the Cervix During Labor. C. B. Ingraham and E. S. Taylor.—p. 873.
Subacute Bacterial Endocarditis During Pregnancy. M. E. Davis and R. F. Wortmann.—p. 878.

Analgesia and Anesthesia in Obstetrics.—Anderson studied 700 obstetric cases in which the combined amnesic and anesthetic action of evipal soluble given rectally, scopolamine hydrobromide given hypodermically and cyclopropane administered by inhalation was found safe and effective. Analgesia and amnesia were complete in 93 per cent of cases; in 7 per cent little or no relief of pain was experienced. The 4 stillbirths occurring in this group had no connection with the analgesia and anesthesia. Less than 7 per cent of newborn babies required artificial resuscitation. All of these survived with no further trouble after resuscitation. About 5 per cent of patients became difficult to manage while under sedation. This is an improvement over results with most barbiturate-scopolamine combinations. Cervical lacerations amounted to 4 per cent and were repaired immediately following delivery. This small incidence of laceration speaks well for the relaxing effect of evipal and scopolamine on the cervical muscle fibers. There was an increase in the proportion of perineal application of forceps in vertex presentation, especially in primigravidas, whenever analgesia and surgical anesthesia were used.

Minimal Spinal Anesthesia in Delivery.—Haugen and Benson analyze 1,000 cases delivered under "minimal dose spinal anesthesia." Metycaine 22.5 mg. (1.5 cc. of a 1.5 per cent solution) was found to be the minimal practical dose and was used in every instance. There were no instances of the usually feared side effects of spinal anesthesia in the obstetric patient. "Minimal spinal anesthesia" in this series proved to be a safe and desirable anesthetic method for operative vaginal delivery, and the results indicate that it deserves a place in the obstetrician's armamentarium for use in selected cases.

A 55 Pound Solid Uterine Myoma.—Beacham and his associates report the removal from a woman aged 59 of a solid myoma which weighed 55 pounds (25 Kg.) and measured 17 inches (43 cm.) in diameter. The patient is enjoying excellent health four years after operation.

American Journal of Psychiatry, New York

103:577-720 (March) 1947. Partial Index

Psychiatric Experience in the War, 1941-1946. W. C. Menninger.—p. 577.
Accomplishments of Psychiatry in the Army Air Forces. J. M. Murray.—p. 594.
Psychiatric Casualties in Submarine Warfare. I. F. Duff and C. W. Shilling.—p. 607.
The Paranoiac Officer and the Officer Paranee. H. Rosen and H. E. Kiene.—p. 614.
Pragmatic Psychotherapy in Military Training Centers. B. A. Cruvant.—p. 622.
Use of Hypnosis in Treatment of Acute Combat Reactions. F. D. Kartchner and I. N. Korner.—p. 630.
Experience with Group Psychotherapy as a Method of Treatment for Veterans. M. Grotjahn.—p. 637.
Utilization of a Therapy Group in Teaching Psychotherapy. S. B. Hadden.—p. 644.
Psychotherapy for General Practitioner: Program for Training. T. A. C. Rennie.—p. 653.
Homosexual Woman. J. MacKinnon.—p. 661.
Use of Electric Shock Therapy in Psychoneurosis. D. M. Hamilton.—p. 665.
Evaluation of Shock Therapy. L. Salzman.—p. 669.
Effects of Electrically Induced Convulsions on Respiration in Man. M. D. Altschule, W. M. Sulzbach and K. J. Tillotson.—p. 680.
Program for Training Attendants in Mental Hospitals. Laura W. Fitzsimmons and C. P. Fitzpatrick.—p. 685.
Brain Metabolism in Man: Unanesthetized and in Pentothal Narcosis. W. A. Himwich, E. Homburger, R. Maresca and H. E. Himwich.—p. 689.
Emotions in the Allergic Individual. F. C. Metzger.—p. 697.
Psychologic Factors in Men with Peptic Ulcers. F. T. Kapp, M. Rosenbaum and J. Romano.—p. 700.

Annals of Otol., Rhin. and Laryngology, St. Louis

56:1-244 (March) 1947. Partial Index

Subdural Empyema Secondary to Frontal Sinusitis: Review of Clinical Features and Report of 3 Cases. F. M. Anderson.—p. 5.
Ménière's Disease. T. Cawthorne.—p. 18.
Antibiotics in Treatment of Sinus Infections. H. P. Schenck.—p. 39.
*Histologic Effect of Repeated Application of Certain Nose Drops to the Nasal Mucous Membrane of Rabbits. R. E. Ryan.—p. 46.
Basic Principles of Radiation Therapy. L. F. Morrison.—p. 74.
Use of Streptomycin in Treatment of Diffuse External Otitis. B. H. Senturia and R. H. Broh-Kahn.—p. 81.
Some Present Day Concepts of Headache: Analysis of 1,000 Cases of Headache. J. H. Hersh.—p. 98.
Congenital Choanal Atresia: New Surgical Approach. W. K. Wright, G. E. Shambaugh Jr. and L. Green.—p. 121.
Use of Thrombin in Nasal Surgery. S. L. Fox.—p. 127.
*Acute Mastoiditis Masked by Penicillin Therapy. J. H. Barrett.—p. 135.
Severe Epistaxis and Its Management: Report of 11 Cases in Which External Carotid Artery Was Ligated. A. A. Spar and O. E. Hallberg.—p. 141.
Treatment of Certain Specific Types of Headache with Histamine. F. K. Hansel.—p. 152.
Poliomyelitis and the Otolaryngologist. P. M. Hamilton.—p. 161.
Premedication in Tonsillectomies in Children Under Six Years Old. Margaret Noyes Kleinert.—p. 168.

Effect of Application of Nose Drops on Nasal Mucosa of Rabbits.—Ryan used two types of proprietary nose drops to determine the effect of nose drops on the nasal mucous membrane of rabbits. Each of these preparations quickly destroyed the cilia. There was no evidence of development of new cilia during the study. The epithelium was transformed into stratified squamous epithelium. The author concludes that the overuse of nose drops is harmful to the nasal mucous membrane of the rabbit. The clinical picture in rabbits was similar to that observed in human beings who had used nose drops excessively. Nose drops should not be used promiscuously.

Acute Mastoiditis Masked by Penicillin Therapy.—Barrett shows that penicillin will cure most cases of acute otitis media if given in adequate doses, the exceptions being the ones due to bacteria that are insensitive to the drug. Penicillin is effective in the phlegmonous form of acute mastoiditis. After the infection has progressed to the stage of coalescent mastoiditis the drug alone is not sufficient. The severity of the disease process is reduced, but the usual clinical symptoms and findings are often distorted. Penicillin therapy changes the clinical picture of lateral sinus phlebitis, meningitis and petrositis. Surgical intervention in addition to the administration of penicillin is necessary in the majority of such cases to effect a cure.

Canadian Medical Association Journal, Montreal

5:361-474 (April) 1947

Clinical Differentiation in Syndrome Called Atypical Pneumonia. J. D. Adamson and R. E. Beamish.—p. 361.
Use and Limitations of Hearing Aids. G. A. Fee.—p. 366.
Chronic Empyema. G. F. Skinner.—p. 371.
*Splenosis. G. G. Stobie.—p. 374.
*New Factors in Etiology of Obliterative Arterial Disease. J. C. Luke.—p. 377.
Surgery of Heart Disease. J. H. Palmer.—p. 380.
Surgical Management of Gangrenous Bowel in Infancy. D. E. Ross and B. L. Jewett.—p. 386.
*Cerebral Air Embolism Following Artificial Pneumothorax: Treatment with Prolonged Inhalation of Oxygen. H. G. Kelly, W. C. Gibson and J. F. Meakins.—p. 388.
Management of Asthma. H. K. Detweiler.—p. 392.
Folic Acid in Treatment of Pernicious Anemia. M. J. Tuttle and J. W. Scott.—p. 396.
Personality Changes Associated with Surgical and Radiation Castration. F. E. McNair.—p. 400.
Auricular Flutter: Results of Therapy in a General Hospital over a Ten Year Period. W. N. Bell and G. F. Strong.—p. 404.
Myopia. A. L. Morgan.—p. 406.
Etiology and Treatment of Hyperemesis Gravidarum. W. N. Kemp.—p. 409.
Psychomotor Epilepsy. G. A. Davidson.—p. 410.
Brucellosis. J. W. Scott.—p. 414.
Treatment of Motion Sickness: Review of Therapeutic Studies Sponsored by National Research Council of Canada. R. L. Noble, E. A. Sellers and C. H. Best.—p. 417.

Splenosis.—Stobie points out that hypersplenism is being looked on as a possible cause for the destruction of all or certain elements of the blood, such as that found in thrombocytopenic purpura, where only the platelets of the blood are affected, and again in congenital hemolytic icterus, where a destruction of the erythrocytes takes place. The increased pigments in the blood and tissues from the brokendown erythyrocytes which must be excreted by the liver result in a high incidence of gallstones of the bile pigment type. That the spleen is the causative factor in these two blood diseases is proved by the improvement that follows splenectomy. True accessory spleens are found only in areas where splenic tissue developmentally arises. There is, however, another condition in which multiple pieces of splenic tissue are found attached and growing throughout the whole peritoneal cavity. This condition is splenosis which results from seeding of splenic pulp cells. The author reports the occurrence in a woman aged 23 of seeding after splenectomy for nontraumatic reasons. Surgical technic for splenectomy should be designed to remove completely all blood from the abdominal cavity, and the abdominal wall incision should also be protected from splenic blood to prevent implants. A recurrence of congenital hemolytic icterus following splenectomy may be caused by splenosis.

Obliterative Arterial Disease.—Luke reviews 25 cases recently studied in the vascular service of the Royal Victoria Hospital. Clinical and laboratory investigations and studies of specimens of leg arteries suggest that Buerger's disease is much less common than is generally believed. It is a generalized progressive disease responding only briefly to the present methods of treatment, including sympathectomy. Leg amputation is a frequent sequel. The group showing the chronic degenerative process on biopsy has a much better prognosis, owing to the slowness of the progression of the disease. These cases show a long lasting improvement following lumbar sympathectomy. The author is of the opinion that the many glowing reports previously published of the good results of sympathectomy and other treatments in Buerger's disease are incorrect, as what is being reported as Buerger's disease is not necessarily proved. A correct etiologic diagnosis of arterial occlusive disease of the legs is most difficult, especially in the young and middle aged group. Biopsy of one of the main arteries, preferably at the time of sympathectomy, will give the most information possible.

Oxygen in Air Embolism Following Artificial Pneumothorax.—Kelly and his associates report the history of a woman aged 28 in whom cerebral air embolsm followed artificial pneumothorax. Initial convulsions, coma, hemianopsia and hemianesthesia disappeared, but there was a residual left sided hemiparesis. Serial electroencephalograms showed obliteration of normal cortical activity in this instance, with a gradual return toward normal. The continuous breathing of pure oxygen for a period of nine and one-half hours, even though delayed for an interval of three days, was associated with great improvement. Present day methods of treating air embolism following artificial pneumothorax are ineffectual. The author urges the use of pure oxygen breathing over long periods to combat the unfavorable effects of cerebral air embolism immediately following the introduction of air into the circulation.

Delaware State Medical Journal, Wilmington

19:59-76 (April) 1947

Periarteritis Nodosa: Case Requiring Surgery, with Review of the Literature. T. J. Bulger.—p. 59.
Intussusception. Case Report. J. N. Attie.—p. 66.
Krukenberg Tumors. M. E. Conrad.—p. 68.

Industrial Medicine, Chicago

16:219-274 (May) 1947

Absenteeism and Separation in Relation to Length of Employment. K. Brodman and L. P. Hellman.—p. 219.
Mass Chest Survey at Douglas Aircraft Plant. E. C. Armes.—p. 225.
Medical Records. C. E. Martin.—p. 228.
*Cold Wave Dermatitis: Report of 2 Cases. C. M. McGill and L. F. Ray.—p. 238.

Cold Wave Dermatitis.—According to McGill and Ray "cold wave" preparations contain organic, inorganic or synthetic chemicals in a strong alkaline medium which dissolve the horny sheath of the hair while it is being wound to the desired curl; then the keratolytic solution is neutralized with water or hydrogen peroxide and the hair returned to its normal consistency, "permanently" maintaining its new shape. These substances can irritate the skin of the beauty operator or the customer if contact is prolonged or frequent. In addition to being primary irritants, these materials may also develop a localized sensitivity after repeated use. Two clinically proved cases and 11 cases allegedly due to these preparations are cited.

Journal of Gerontology, Springfield, Ill.

1:153-296 (April) 1946

Geriatrics. E. J. Stieglitz.—p. 153.
Study of Pathogenesis of Chronic Pulmonary Disease (Bronchiectasis) of Old Rats. J. A. Saxton Jr., L. L. Barnes and Gladys Sperling.—p. 165.
Geriatric Urology. J. S. Ritter and A. Sporer.—p. 181.
Factor of Age in Determining Toxicity of Certain Poisons. W. deB. MacNider.—p. 189.
Effects of Estrogens on Senile Skin. M. A. Goldzieher.—p. 196.
Preparation for Retirement. E. H. Moore.—p. 202.
Influence of Aging Process on Distribution of Certain Components of Blood and Gastrocnemius Muscle of Albino Rat. S. M. Horvath.—p. 213.
Comparative Chronologic Age in Man and Other Mammals. S. A. Asdell.—p. 224.
German Health Insurance: Evolution of a Bureaucracy. Elizabeth W. Wilson.—p. 237.

1:297-410 (July) 1946

Relationship of Medical Practice to Gerontology. J. E. Paullin.—p. 297.
*Splenectomy for Patients Past Sixty. G. M. Curtis and D. Movitz.—p. 303.
Selective Placement of Older Workers. C. Kuh.—p. 313.
Effects of Androsterone, Estradiol and Thyroid Hormone on Artificial Premature "Climacteric" of Pure Gonadal Origin Produced by Ovariectomy in Rats: I. Effects on Weights of Organs. V. Korenchevsky and Vera E. Jones.—p. 319.
Id.: II. Effects on Histologic Structure of Liver and Kidneys. Vera E. Jones and V. Korenchevsky.—p. 336.
Histochemical Changes Associated with Aging: IV. Liver, Brain and Kidney in Rat. O. H. Lowry, A. B. Hastings, C. M. McCay and Andrea N. Brown.—p. 345.
Age and Infection: Review. F. Duran-Reynals.—p. 358.
British National Health Insurance: The Workers' Pride. Elizabeth W. Wilson.—p. 374.

Splenectomy in Patients Past Sixty.—Curtis and Movitz say that of 200 consecutive splenectomies done at Ohio State University Hospital there were 14 that were done on patients past 60. The good results obtained by splenectomy for congenital hemolytic icterus, primary thrombocytopenic purpura, Banti's syndrome and some of its clarified complexes indicate the procedure for these diseases in the aged. It also appears probable that splenectomy is indicated for excessive splenic thrombocytolysis or hemolysis in lymphatic leukemia. The hazards of splenectomy and those resulting from senescence are analyzed. The study reveals that no patient of the elderly group succumbed to the relatively hazardous operation of splenectomy because of senescence. Splenectomy for those who survived the operative procedure has been worth while from two points of view: The patients have improved or recovered from the splenic disease, and, secondly, their expected length of life has suffered little or no interference from the previous splenic disease.

Journal-Lancet, Minneapolis

67:171-222 (May) 1947

Epidemiology of Streptococcal Infections. F. F. Schwentker.—p. 171.
*Exchange Transfusion: New Method of Treatment for Erythroblastosis Fetalis. E. S. Platou, W. R. Heilig, R. Bergan and R. B. Tudor.—p. 180.
Quantitative Aspects of Fluid Therapy in Infants and Children. J. A. Anderson.—p. 185.
*Hypoglycemia Associated with Hyperplasia of the Islets of Langerhans: Report of a Case Successfully Treated by Surgery. H. Agustsson, R. B. Tudor and T. C. Chisholm.—p. 190.
Acute Intussusception in Infancy and Early Childhood: Review of 55 Consecutive Cases. O. S. Wyatt and T. C. Chisholm.—p. 193.
*Tracheotomy in Bulbar Poliomyelitis. R. E. Priest and N. F. Goltz.—p. 196.
Nutritional and Psychologic Aspects of Care of Patients with Bulbar Poliomyelitis. A. J. Schroeder.—p. 199.
Observations on a Poliomyelitis Outbreak in North Dakota in 1946: Special Consideration of Spinal Fluid Findings. L. G. Pray.—p. 202.
Apparatus for Relief of Acute Obstructive Laryngitis: Treatment of Fulminating Case Due to H. Influenzae. E. S. Platou, R. Bergan and E. Burklund.—p. 206.
Unusual Causes of Hematuria in Infants and Children. R. B. Tudor.—p. 209.
Paroxysmal Tachycardia in Infancy. E. C. Burke and E. S. Platou.—p. 211.

Exchange Transfusion for Erythroblastosis Fetalis.—Platou and his associates point out that treatment of erythroblastosis fetalis has heretofore been directed primarily at the anemia only. Rh positive blood cells were used, thereby adding "fuel to the fire." Studies have shown that the fate of these Rh positive cells is early hemolysis. Some infants whose livers might tolerate the products of this hemolytic reaction did survive in spite of the added Rh positive cells. Newer knowledge regarding the pathogenesis in erythroblastosis makes liver protection the therapeutic keynote. The procedure described consists in withdrawing an infant's Rh positive cells and maternal antibody and replacing these with safe Rh negative cells and "normal" plasma. Withdrawal and replacement are done through a catheter that is inserted into the umbilical vein. Two cases of impending erythroblastosis fetalis have been treated successfully by the exsanguination transfusion technic. Two similar cases unsuccessfully treated by currently used transfusion technics are presented. The indications were multiparity, previously born erythroblastic babies, rising antibody titer, paternal homozygosity and serologic abnormality in the baby. With these indications prophylactic or early treatment is imperative. Delay has been shown to result in irreparable liver damage. Liver, iron and accessory transfusions of Rh negative cells (suspended in saline solution) are occasionally necessary to combat the aregenerative phase so frequently encountered in these cases in the first few weeks of life. Washed maternal red cells are safe for single accessory transfusion when an Rh negative donor is difficult to find.

Hypoglycemia with Hyperplasia of Islets of Langerhans.—Discussing the multiplicity of types of hypoglycemia, Agustsson and his collaborators point out that while hypoglycemia may be due to the disease of the liver and a number of endocrine glands, it most often occurs with a disturbed secretion of the pancreas. Disease of the aforementioned organs should be ruled out before focusing all attention on the pancreas. Functional pancreatic adenomas and diffuse hyperplasia of the islets of Langerhans seem to be extremely rare in infants and children. The authors report a case of severe hypoglycemia due to overactivity of the islets of Langerhans in a 4½ months old infant, with recovery following a subtotal pancreatectomy. The pathologic specimen showed hyperplasia of the islets of Langerhans. Early diagnosis and treatment are urged to avoid serious neurologic sequelae. The authors accept the first three of the four points advanced by Hartmann as criteria for the need of surgical treatment in hypoglycemia: 1. There should be proof of a persistent or a frequently recurring hypoglycemia by blood analysis. 2. It should be shown that the symptoms expected to be relieved by surgery can be relieved by dextrose administration. 3. It should be shown that the symptoms cannot be relieved by conservative measures of diet regulation.

Tracheotomy in Bulbar Poliomyelitis.—Priest and Goltz analyzed experiences with tracheotomy at the Minneapolis General Hospital during the poliomyelitis epidemic of 1946. Tracheotomy was employed cautiously. Criteria for tracheotomy were (1) respiratory distress as evidenced by recurrent cyanosis, coarse rales in the chest and laryngeal stridor; (2) excitement and unmanageability, causing the patient to resist pharyngeal aspiration strenuously; (3) stupor of a degree sufficient to make the patient oblivious to accumulation of secretion in his airway; (4) inability to cough effectively; (5) pharyngeal pooling of mucus, vocal cord paralysis or intralaryngeal hypesthesia demonstrable by laryngoscopy. Twenty-two tracheotomies were done: 7 patients lived and 15 died. It is thought that the procedure was life saving in 5 cases. Some patients probably died because the operation was performed too late.

New England Journal of Medicine, Boston

236:611-646 (April 24) 1947

*Streptomycin Treatment of Pulmonary Infections: Clinical and Bacteriologic Studies of 6 Cases. H. W. Harris, R. Murray, T. F. Paine and M. Finland.—p. 611.
*Sensitivity to Pork Liver Extract in Pernicious Anemia: Clinical Observations on 14 Patients. J. L. Bauer, R. Janet Watson, J. R. Chambliss and C. S. Davidson.—p. 622.
The Commonwealth's Health Program. V. A. Getting.—p. 626.
Urology. F. H. Colby.—p. 630.
Multiple Polypoid Carcinomas of Stomach, with Metastasis.—p. 634.
Adenocarcinoma of Pancreas, with Liver Metastases.—p. 637.

Streptomycin Treatment of Pulmonary Infections.—The first 3 of 6 patients in whom Harris and his associates resorted to treatment with streptomycin had severe pneumonia, which in 2 cases had failed to respond to penicillin. One of these cases, in which sulfadiazine had been used as a supplement, had a fatal outcome, but in all 3 cases there was bacteriologic evidence of improvement after streptomycin had been started. The 3 *remaining* cases represent chronic and recurrent bronchopulmonary infections in which gram negative bacilli were found in large numbers in the sputum. The streptomycin was used in these cases in an attempt to reduce the amount of cough and sputum by inhibiting or eliminating the gram negative flora. Each of these patients received a fairly long course of penicillin intramuscularly, and 2 of them also received the antibiotic by inhalation with only partial or temporary relief before streptomycin treatment was started. In 2 cases definite clinical improvement occurred after the streptomycin had been begun. In the other cases there was no improvement in spite of large doses of streptomycin intravenously and by inhalation, and death occurred. One of the causes of clinical failure appears to be the rapid development of streptomycin resistance by the infecting organisms. In 1 case drainage from a chronic suppurative otitis media stopped promptly after systemic and local streptomycin therapy.

Sensitivity to Pork Liver Extract.—Bauer and his associates report observations on 14 patients who acquired sensitivity to a pork liver extract, which was given intramuscularly to about 200 patients during this period. There were 3 varieties of clinical manifestations of sensitivity. The most frequent effect consisted of generalized itching, urticaria, edema of the face and lips, nausea and vomiting. The second type exhibited peripheral vascular collapse, including thready pulse, sweating, cyanosis, weakness and fainting. A third group of patients manifested local signs that may have been due to an Arthus type of sensitivity consisting of swelling, itching and induration without necrosis at the site of injection. The immediate symptoms of sensitivity were relieved at least in part by the injection of epinephrine. Change to an extract derived from beef liver abolished the sensitivity. Skin tests with liver extracts derived from pork, beef and lamb indicated in general greater sensitivity to extract of pork liver than to that of beef and lamb liver. It appeared that the sensitivity to liver extract represented an acquired type of species rather than one of organ specificity.

New Jersey Medical Society Journal, Trenton

44:125-182 (April) 1947

The 181st Annual Meeting of the Medical Society of New Jersey, Haddon Hall, Atlantic City, April 22, 23 and 24, 1947.—p. 126.

44:183-218 (May) 1947

Cancer Program in New Jersey: Essentials in Care of the Cancer Patient. W. O. Wuesten and others.—p. 186.
Rehabilitation Service in New Jersey. J. A. Brodkin.—p. 191.
*Quinidine: A Dangerous Ally. A. D Dennison Jr.—p. 193.

Quinidine a Dangerous Ally.—Dennison points out that quinidine in overdosage can produce auriculoventricular block, extrasystoles, paroxysmal tachycardia, cardiac standstill from auricular standstill, intraventricular block and ventricular fibrillation. Contraindications to the use of quinidine include idiosyncrasy to the drug, a history of embolism, heart block, old age, congestive heart failure of long standing, great enlargement of the heart and mitral stenosis. The following are accepted indications for quinidine treatment: auricular fibrillation of less than three months' duration, paroxysmal ventricular tachycardia, episodes of auricular paroxysmal tachycardia and extrasystoles, particularly those arising in the auricle. Prophylactically it can be used in coronary thrombosis to prevent ventricular paroxysmal tachycardia and ventricular fibrillation. Occasionally it is indicated in auricular flutter.

Occupational Medicine, Chicago

3:225-334 (March) 1947

Industrial Health. S. J. Seeger.—p. 225
Problems of Shallow Water Diving: Report Based on Experiences of Operational Swimmers of Office of Strategic Services. C. J. Lambertsen.—p. 230.
Recent Experiments in Medical Service for Small Plants. F. E. Poole —p. 247.
Recent Experiments in Medical Service for Small Plants. L. Arling. —p. 251.
Health Service in Small Plants. N. Millman.—p. 257.
Review of 10,834 Preplacement Physical Examinations in Wartime Industry. Jean Spencer Felton.—p. 261.
Paracelsus: Founder of Occupational Medicine. W. K. Frankel.—p. 288.
Cardiac Tamponade Caused by Industrial Injury: Report of a Case. F. F. Boys.—p. 300.

Ohio State Medical Journal, Columbus

43:337-452 (April) 1947

*Penicillin Treatment of Gonorrhea in Female: Study of Time-Dose Ratio. A. C. Barnes and R. F. Daly.—p. 369.
Recent Research in Allergy. J. H. Mitchell.—p. 372.
Present Status of Cancer Research. S. P. Reimann.—p. 375.
Subarachnoid Hemorrhage. J. T. Bakody.—p. 381.
Relationship of Gynecology to Obstetrics. R. E. Krigbaum.—p. 384.
*Evaluation of Treatment of Primary Pneumococcic Pneumonia. R. T. Thompson.—p. 388.
Prevention of Rheumatic Fever in Children by Use of Sulfonamides. R. A. Lyon, Louise W. Rauh and R. E. Wolf.—p. 394.

43:453-572 (May) 1947

Can Military Medical Education Offer Any Features Applicable to Civilian Professional Instruction? T. E. Rardin and N. B. Reicher. —p. 485.
Treatment of Uterine Prolapse Syndrome by Spalding-Richardson Composite Procedure. R. C. Austin.—p. 490.
Nonsyphilitic Lesions of Penis. I. L. Schonberg.—p. 498.
Penicillin—Indications and Methods of Administration. R. F. Parker. —p. 501.
Readjustment of Handicapped Veteran. W. C. Menninger.—p. 504.

Penicillin for Gonorrhea in the Female.—Barnes and Daly regard two considerations as fundamental in the search for the ideal form of penicillin therapy: (1) the percentage of cures, (2) the applicability of the chosen schedule to the nature of the practice and to the type of patient. Since a considerable number of patients treated by the authors are indifferent to and/or apprehensive of treatment, it has been felt imperative to achieve all therapy in one clinic visit. Sodium penicillin in aqueous solution (with 0.25 per cent procaine) has been used. Schedule A consists of 100,000 Oxford units given in five injections of 20,000 Oxford units each at two hour intervals. The elapsed time on such a program is eight hours. Schedule B consists of the same time schedule but double the amount of penicillin. Forty thousand Oxford units was given in each injection at the two hour intervals. Schedule C consists of three injections at two hour intervals. In the first injection 50,000 units is given in each buttock for a total initial dose of 100,000, followed by two 50,000 Oxford unit injections at two hour intervals. The same total unitage is achieved as in schedule B, but the elapsed time is only four hours. It was found that the shortening of the time schedule from eight to four hours resulted in a loss of almost 10 per cent effectiveness (90 per cent to 80.7 per cent) even though the dosage remained constant.

Evaluation of Treatment of Pneumococcic Pneumonia.—Thompson evaluates the treatment of 189 cases of primary pneumococcic pneumonia with sulfamerazine to indicate where sulfonamides have been inadequate in the management of pneumococcic pneumonia and to emphasize that the great majority of patients who die of pneumococcic pneumonia are above 40 years of age. Patients who die usually have cardiac or renal disorder prior to death, and many patients respond to treatment for pneumonia but die of some latent disorder which may have been aggravated by the acute illness. Twenty-three of the 189 patients had an elevation of the blood urea nitrogen above 40 mg. per hundred cubic centimeters; 14 recovered and 19 died. Fourteen of the patients who died had elevation of blood urea nitrogen on admission, before sulfamerazine was started. Only 1 fatality could be ascribed to the treatment. A method of assessing therapeutic efficacy is discussed and is mainly a matter of defining treatment failure. Sulfamerazine was found a safe and efficacious remedy.

Oklahoma State Medical Assn. Jour., Oklahoma City

40:117-178 (April) 1947

The Overweight Obstetric Patient, with Special Reference to Use of Dexedrine Sulfate. J. W. Finch.—p. 117.
Choice of Carbohydrates Used in Artificial Feeding of Infants. C. J. Alexander.—p. 122.
Infectious Mononucleosis: Benign Lymphadenosis or Glandular Fever. W. H. Kaeiser.—p. 125.
So Your OB Is Rh Negative? L. G. Livingston.—p. 130.
Epidemic Diarrhea of the Newborn. H. W. Buchner.—p. 132.

40:179-216 (May) 1947

The Cardiac in Pregnancy. F. R. Hood.—p. 181.
Chronic Rhinitis. R. W. Rucker.—p. 184.
Pilonidal Cysts and Sinuses. B. J. Cordonnier.—p. 186.
Staphylococcus Ulcer of Cornea. W. W. Mall.—p. 190.

Pennsylvania Medical Journal, Harrisburg

50:681-776 (April) 1947

Pregnancy Complicating Diabetes. Priscilla White.—p. 705.
Glaucoma Clinic: Its Need, Organization and Early Growth. J. G. Linn. —p. 709.
"Adequate" Diphtheria Immunization in a Community. E. Eichelberger. —p. 712.
Primary Carcinoma of the Ureter. S. L. Grossman and R. E. Allyn. —p. 715.
Recent Advances in Syphilologic Diagnosis and Treatment: Nonspecific Positive Serologic Test and Use of Penicillin. J. H. Stokes.—p. 718.
Delayed Ligation of the Umbilical Cord. G. N. Ballentine.—p. 726.
Common Misconceptions of Ocular Disturbances in Children. R. C. Lanciano.—p. 729.

Physiological Reviews, Baltimore

27:167-334 (April) 1947

The Nature of Pain. H. G. Wolff and J. D. Hardy.—p. 167.
Heat: Man's Exchanges and Physiologic Responses. W. Machle and T. F. Hatch.—p. 200.
Definition and Meanings of *p*H. A. G. Ogston.—p. 228.
Review of Physiologic and Psychologic Studies of Sexual Behavior in Mammals. F. A. Beach.—p. 240.
Recent Advances in Study of Biologic Competition Between Structurally Related Compounds. D. W. Wooley.—p. 308.

Public Health Reports, Washington, D. C.

62:597-628 (April 25) 1947

*Control of Houseflies by DDT Sprays. W. C. Baker.—p. 597.
A Mobile, Collapsible Laboratory and Field Table. G. D. Clayton. —p. 613.

Control of Houseflies by DDT Sprays.—Baker and his associates investigated milk and food establishments. In dairies a 2.5 per cent DDT-xylene Triton emulsion was used at the rate of 200 mg. of DDT per square foot. A complete treatment of both barn and outbuildings usually gave satisfactory control for three months or more. In restaurants a 7.5 per cent emulsion was applied to the ceiling and walls of dining rooms and kitchens at the rate of 200 mg. of DDT per square foot Excellent control was obtained for three or more months in the restaurants treated. In small food and ice cream shops, 40 to 60 feet of DDT-impregnated cord hung as a replacement for electric light pull cords, along the chains of suspended display shelves and from ceilings at locations where the cord would be accessible to the flies gave good control when fly populations were not excessive In shops with a great influx of flies, the treated strings did not bring the flies under satisfactory control.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

22:235-328 (March) 1947

Low Incidence of Enterobius Vermicularis in Natives of Guam N. R. Stoll, B M Chenoweth Jr and J L Peck Jr —p 235
Intradermal Reactions to Fresh and Stored Antigens Prepared from Cercariae of Schistosoma Mansoni. Caroline K Pratt and J O Gonzalez —p 254
Relation of Brucellosis to Human Welfare I F Huddleson —p 260
Ponce Malaria Control Project. A H Neill —p 292
Schistosomiasis Mansoni in the Republic of Santo Domingo Report of 6 Cases A M Ponce Pinedo —p 308

Rocky Mountain Medical Journal, Denver

44:345-432 (May) 1947

Medical Care of the Veteran P R Hawley —p 363
Some Public Relations Opportunities for Colorado Doctors R. T. Rich —p 367
Differential Diagnosis and Treatment of Neuralgia of Face A. W. Adson —p 371
Newer Developments in Pathogenesis and Treatment of Hypertension W Dock —p 372
Value of Stained Vaginal Smear in Gynecologic Diagnosis H. F. Traut —p 376
Relationship and Practical Application of the Rh and Hr Factors G A. Matson, M S Sanders and J R Wherritt —p 380

Surgery, Gynecology and Obstetrics, Chicago

84:891-1017 (May) 1947

Treatment of Trichomonas Vaginalis Vaginitis W J Reich, Helen L. Button and M J Nechtow —p 891
Extensive Hemangioma Report of Cases D C Elkin and F W. Cooper Jr —p 897
Choice of Operation for Treatment of Arteriovenous Fistulas E. C. Heringman —p 903.
Action of Urea and Some of Its Derivatives on Bacteria Effect of Mixture of Urethane and Sulfanilamide on Bacterial Flora of Infected Wounds in Man C W Howe and L Weinstein —p 913
*Gelatin Solution in Treatment of Shock from Graded Hemorrhage S. O. Levinson, Martha Janota, F. Arimoto and H Necheles —p 925.
*Circumscribed Chronic Suppurative Mastitis Simulating Cancer H K. Tuttle and B H. Kean —p 933
Comparison of Suture and Nonsuture Methods for Anastomosis of Veins. T N P Johns —p 939
Origin and Development of Erect Posture C. A Splithoff —p 943
*Malignant Lymphoma Value of Radical Surgery in Selected Cases C. A Hellwig —p 950
Digestion of Living Tissue by Hyperacid Stomach Experimental Study. P B Price and T F Lee —p 959
Adolescent Primigravida H E Schmitz and Janet E Towne —p 962
Results of Treatment of Epidermoid Carcinoma of the Anus and Rectum R H Sweet —p 967
Management of Jaw Fractures L T. Barclay, S D Gordon and H H. Campbell —p 973
Surgery of Posterior Interosseous Branch of the Radial Nerve Analysis of 58 Cases J H Mayer Jr and F. H Mayfield —p 979
Histopathology of Gastric Semisquamous Epithelial Layer F Duran Jorda —p 983.
Notes on History of Resuscitation in Mediterranean Theater of Operations H K Beecher —p 989

Gelatin Solution in Shock.—Levinson and his associates studied the efficacy of gelatin solutions in the treatment of hemorrhagic shock Various brands of gelatin, gelatins with different degrees of hydrolysis and various concentrations of gelatin solutions were tried On the basis of their experiences on dogs they recommend gelatin solution for use on patients Gelatin cannot replace whole blood, nor is it a substitute for plasma, but it has value as an inexpensive, easily available agent to combat shock due to plasma loss Experience with the use of gelatin solution on patients has been favorable.

Circumscribed Chronic Suppurative Mastitis Simulating Cancer.—Tuttle and Kean observed in a woman aged 44 a hard nodular mass adherent to the overlying skin, with typical peau d'orange and retracted nipple accompanied by enlarged, hard, nontender, homolateral axillary lymph nodes A diagnosis of carcinoma of the breast and axillary metastases was made and a radical mastectomy was done. This revealed a hard, circumscribed, unencapsulated mass filled with thick, yellowish green pus During the following years this type of lesion was observed at fairly regular intervals and in numerous instances presented great difficulty in differentiation from carcinoma of the breast. All breast tumors removed at Gorgas Hospital between 1920 and 1945 were reviewed and a total of 32 cases of chronic suppurative mastitis were selected for study. Its relative incidence as compared with carcinoma was approximately 1 to 5. Simple incision and drainage is a poor operation for this disease. The best surgical treatment for a patient *with a tumor of the breast in which the differential diagnosis* rests between cancer and circumscribed chronic suppurative mastitis is as follows: First decide whether the tumor mass alone or the entire breast is to be removed, then proceed with the excision or simple mastectomy. The tumor or breast should be immediately sectioned on a separate table Examination of the tumor at this time will solve the problem in most instances. The tumor should not be incised in situ; pus, if present, will contaminate the entire wound and may prolong the convalescence If this procedure is followed, patients with this benign lesion may be spared radical treatment, whereas those with malignant tumors will not be deprived of the full diagnostic and surgical efforts required in the treatment of cancer.

Malignant Lymphoma.—Hellwig says that in the course of two decades he observed that patients with malignant lymphoma occasionally lived five years and longer after surgical removal of a single tumor. This discrepancy between occasional long survival periods after operation and the discouraging view of most surgeons regarding malignant lymphoma prompted him to review 234 cases of malignant lymphoma Analysis of 130 cases with complete clinical records followed for a sufficient length of time to be of value revealed a close correlation between the histology and life expectancy. The average duration of disease was 26 7 months It varied in the different histologic types between 3 months and 4 8 years Radiation therapy may occasionally save a life when the tumor is located in a vital part of the body inaccessible for surgery, but it will seldom prolong the life expectancy inherent in the histologic type of lymphoma Early surgical removal of a primary focus of disease offers the best chance of cure in malignant lymphoma Of 21 patients who received radical surgery for a single primary focus, 2 survived for from five to twenty years

Virginia Medical Monthly, Richmond

74:195-240 (May) 1947

Review of Some Past and Present Types of Psychiatric Therapy. J R Saunders —p 295.
Obscure Hematemesis Gastroscopy, an Aid in Its Diagnosis C M. Caravati and J M. MacMillan —p 200
Acanthosis Nigricans—Case of Benign Type in 8 Year Old Girl W. H Kaufman and D C Smith —p 204.
Today's Challenge R B Smith Jr —p 208
Electrocardiographic Changes Occurring During Antimony Therapy G B Craddock and E C Toone Jr —p 210
Primary Cancer of Lung F P Coleman —p 215
Office Gynecology P T Grove —p 223
Mortality from Coronary Disease by Age, Sex and Race J. B Nichols —p 225
Repair of Posterior Vaginal Hernia from Below, Without Opening Sac Report of Case C. I Sease —p 227.

Wisconsin Medical Journal, Madison

46:389-484 (April) 1947

Some Points in the Radiologic Diagnosis of Diseases of Bones and Joints S A Morton —p 403
Fractures of the Wrist and Ankle L V. Littig —p 407.
Amebic Abscess of the Liver F. Raine —p 409.
The Physician and Tuberculosis J. A. Myers —p 412.
Treatment of Malaria M Hardgrove and J B Brown —p 420.

46:489-576 (May) 1947

Maintenance of Adequate Respiratory Exchange R M Waters —p 507.
Antibiotic Substances in Pediatrics R L J. Kennedy and W. E. Herrell —p 509.
Primary Considerations in Retinal Detachment, Based on a Review of 104 Cases P. A Duehr —p 515
Chronic Cervicitis Analysis and Treatment on Basis of Over 2,000 Cases. W J Reich and M. J. Nechtow.—p 520

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

34:225-332 (Jan.) 1947

Dysplasia Epiphysialis Multiplex. T. Fairbank.—p. 225.
Sarcoma in Abnormal Bones. H. Platt.—p. 232.
Needle Biopsy in Clinical Diagnosis of Tumors. F. Ellis.—p. 240.
*Renal Anoxia and Traumatic Uremia Syndrome. E. M. Darmady.—p. 262.
Osteitis Pubis After Suprapubic Operations on Bladder: Report of 10 Cases. E. Kirz.—p. 272.
Razor Blade in Esophagus: Transthoracic Removal. T. H. Sellors.—p. 276.
*Chorioncarcinoma of the Testis with Gynecomastia: Report of a Case with Early Breast Cancer. A. Lyall.—p. 278.
Arnold-Chiari Malformation. G. H. Steele.—p. 280.
Transformation of an Embryonic Lipoma to a Common Lipoma. D. P. Van Meurs.—p. 282.
*Massive Hemorrhage from Peptic Ulcer in Meckel's Diverticulum in Female Child of Eleven Months. R. W. Wilkinson.—p. 285.
Amebic Granuloma of Skin. I. Norwich and D. A. Muskat.—p. 287.
Tooth Plate Impacted in Gullet for Fifteen Years: Removal by Transthoracic Esophagotomy. G. G. Turner.—p. 290.
Carotid Body Tumors. H. M. Goldberg.—p. 295.
Surgical Treatment of Hydrocephalus. Simple Method of Performing Third Ventriculostomy. H. F. McNickle.—p. 302.
Cerebral Thromboangiitis Obliterans. L. Davis and G. Perret.—p. 307.

Renal Anoxia and Traumatic Uremia Syndrome.—Darmady found 44 deaths among 10,000 casualties admitted to a casualty clearing station in England, and of these 12 were due to renal failure. Details of the first 6 of these fatal cases were published, as well as of the 2 cases in which renal failure was recognized clinically and in which recovery occurred. The present report deals with a further 6 cases of fatal traumatic uremia and 3 more cases of uremia with recovery. The etiologic factors and the similarity to other conditions have led to the conclusion that the ultimate cause of death is renal anoxia. The mechanism of the production of renal anoxia by alteration of the blood supply to the kidney by vasospasm is suggested. The dangers of overalkalization and possible help through splanchnic block are brought forward.

Chorioncarcinoma of Testis with Gynecomastia.—A soldier aged 24, whose left testis had been removed two and one half months previously for a tumor, had made a good recovery from the actual operation, but for a few weeks previous to his admission he had been losing weight and had noticed that his breasts were becoming tight and swollen. The condition of the patient rapidly deteriorated, secondary tumors appeared, and he died five weeks after admission. Tumors of the lungs, liver, kidney and para-aortic glands were sectioned and examined by various staining methods. Various sections from both breasts were also examined. The tumors had the typical microscopic appearance of chorioncarcinoma. Lyall regards the presence of early carcinoma in the hyperplastic breast as the most interesting feature of this case.

Hemorrhage from Peptic Ulcer in Child.—Wilkinson reports the occurrence of peptic ulcer in a Meckel's diverticulum in a girl aged 11 months. Complete recovery followed removal of the diverticulum.

British Medical Journal, London

1:587-626 (May 3) 1947

*Folic Acid as Therapeutic Agent. L. S. P. Davidson and R. H. Girdwood.—p. 587.
Physical Health of Children Attending Day Nurseries: Report to the Day Nurseries Committee of the Medical Women's Federation. Margaret E. McLaughlin.—p. 591.
*Potassium Thiocyanate in the Treatment of Hypertension. G. Watkinson and G. Evans.—p. 595.
*Autohemagglutination and Raynaud's Phenomenon. G. B. Forbes.—p. 598.

Folic Acid as Therapeutic Agent.—Employing folic acid in various types of blood dyscrasias, sprue and colitis, Davidson and Girdwood found that a hemopoietic response was obtained only in cases in which the bone marrow was megaloblastic, that is, in pernicious anemia, refractory megaloblastic anemia and sprue. No therapeutic changes were obtained in cases of aplastic anemia, leukopenia or thrombocytopenia. Folic acid controlled the diarrhea and produced general clinical improvement in adults with tropical sprue and idiopathic steatorrhea, but by itself it seldom restored the blood level or blood picture to normal. In none of the cases of celiac disease was any hematologic or clinical improvement noted. The clinical and sigmoidoscopic appearances in 5 cases of idiopathic ulcerative colitis were unaffected by folic acid therapy.

Potassium Thiocyanate for Hypertension.—Watkinson and Evans think that the differences of opinion regarding the value of potassium thiocyanate are due (1) to the narrow margin that exists on occasion between the therapeutic and the toxic dose of the drug, as also to the fact that a toxic rash may appear when the drug concentration in the blood is at a low level, and (2) to the fact that the coincidental arteriosclerotic disease is not as yet either recognized or understood. They review observations on 60 patients with persistent hypertension. They place the patient at rest in bed for the first fortnight or three weeks with symptomatic treatment. After the effect of this treatment on general well-being and blood pressure has been noted, potassium thiocyanate is given for from four to ten days if indications for its use are still present. At the end of one week's treatment the serum thiocyanate concentration is estimated. The quantity of potassium thiocyanate administered should be based on serum estimations. Blood pressure readings are no criterion of dosage. A scheme of dosage is given together with indications for treatment. Symptomatic relief and a significant fall in blood pressure were observed in roughly 60 per cent of the cases. The further observations of 42 patients show that the effect of thiocyanate therapy can be correlated with the phases of the arteriosclerotic process, and that whereas symptomatic relief is given and blood pressure reduction is maintained in approximately 40 per cent of the cases, the continued administration of potassium thiocyanate does not prevent the continued progress of arteriosclerotic disease.

Autohemagglutination and Raynaud's Phenomenon.—Forbes tells of an American sergeant aged 24 who was admitted to the hospital with the complaint that his fingers became blue and numb on exposure to cold environmental conditions. During the patient's stay in the hospital the weather became warmer and attacks did not develop spontaneously. It was possible to induce an attack by immersing the patient's hands in cold water. That the patient was an "autoagglutinator" was first suspected when an attempt was made to do a blood count. Capillary blood issuing from a small puncture wound in the lobe of the ear was seen to agglutinate spontaneously. It was impossible to carry out an accurate blood count, but by warming the patient's ear with a hot water bottle and using pipets and diluting fluids which had been warmed to 37 C., agglutination was temporarily prevented and a reasonably accurate blood count obtained. It was shown that the abnormal agglutinin in the patient's serum was a true autohemagglutinin, but the factor responsible for its presence was not determined. The fact that no abnormality was detected on examinations of the chest does not altogether exclude the possibility that he had had a subclinical attack of primary atypical pneumonia, a disease which was encountered among service personnel in northwestern Europe at the time of his admission. It is suggested that the Raynaud-like attacks which followed exposure of the patient's extremities to low temperatures resulted from blockage of the small peripheral vessels with corpuscular aggregations.

Medical Journal of Australia, Sydney

1:385-416 (March 29) 1947. **Partial Index**

Treatment of Acute Perforation in Peptic Ulcers. A. J. Trinca.—p. 385.
Recent Observations in Uric Acid. A. Bolliger.—p. 394.
Pericarditis and Pericardial Adhesions. J. B. Cleland.—p. 396.

1:417-448 (April 5) 1947

Value of Cold Pressor Test in the Prediction of Hypertension and Toxemia in Pregnancy. Vera I. Krieger and Sara Weiden.—p. 417.
Undergraduate and Postgraduate Education in Physical Medicine. H. Crawford.—p. 423.
Cross Infection of Wounds in Surgical Ward During Trial of Use of Oiled Blankets. Phyllis M. Rountree.—p. 427.
Nutritional Deficiency Diseases. G. B. Hall.—p. 430.

Bruxelles-Médical, Brussels

27:1021-1080 (May 11) 1947

*Treatment of Arterial and Venous Infections with Penicillin. A. Bernard.—p. 1031.
So-Called Medical Exercises in Face of Medicine: Problem of Scoliosis. P. V. Dupuis.—p. 1041.
Rare Case of Intrathoracic Foreign Body. L. Mayer.—p. 1048.

Penicillin in Arterial and Venous Infections.—Bernard administered penicillin to 3 men between 33 and 50 and 2 women aged 54 and 63 with phlebitis, 1 man aged 57 with coronary arteritis and 1 woman aged 52 with coronary panarteritis. The total dose varied between 500,000 and 2,500,000 units. The temperature was restored to normal in thirty-six to forty-eight hours. The penicillin therapy should be continued for at least five additional days or even longer to prevent a recurrence. Drop in temperature was associated with a decisive improvement in general phenomena even in the case of severe polyarteritis. Penicillin therapy is useful in infection which causes spread of the inflammation of the vessels along the intima and by embolism. Continuation and spread of the disease may be prevented by sterilizing the blood and by maintaining asepsis of the blood. The formation of new emboli may be avoided, and new foci resulting from embolism in other organs and vessels may become disinfected. Penicillin is effective not only in thrombosis of large vessels but also in inflammation of coronary vessels. Penicillin does not effect the absorption of the clot, which requires the same length of time as when penicillin is withheld.

Presse Médicale, Paris

55:213-228 (March 29) 1947

*Mechanism and Consequences of Accumulation of Dust in Bronchial and Arterial Sheaths in Course of Pneumonoconiosis. A. Policard.—p. 213.
Intersympathoparasympathetic Mechanism in Terminal Organ. D. Danielopolu.—p. 214.
Prophylaxis of Radiodermatitis Associated with Roentgen Diagnosis. R. Coliez and Y. L. Crehalet.—p. 215.
Peritonitis Encapsulans: Personal Observations. J. Charles.—p. 216.

Pneumonoconiosis.—According to Policard, inhaled dust particles are phagocytosed in the alveoli. Dust loaded cells pass into the conjunctival spaces of the sheaths and into the lymphatics. They block the lymphatics, and edema of the sheaths results. Segmentary fibrosis of the sheaths may be partly due to collagen fibers and partly to reticulin fibrillae. The more or less fusiform thickening of the peribronchial and perivascular sheaths explains the existence of nodules in the lung, which must be distinguished from the silicotic nodules, since they do not contain hyaline fibers and cannot be detached easily from the surrounding tissue. Phosphocalcareous impregnation of the sheaths rather than calcification results from the accumulation of mineral dust, since the carbonate of lime is neither solid nor crystalline but is a combined molecular substance of protein complex, causing radiopacity of the sheath. The conjunctival layer of the sheaths loses its normal elasticity with consequent embarrassment of the respiratory movements, causing dyspnea. The dust particles interfere directly with the nutrition of the arterial wall, causing periarteritis, and accumulation of dust in the peribronchial sheaths is responsible for an indirect disturbance of the nutrition of the wall of the adjacent pulmonary artery. Sclerosis of pulmonary areas results from progressive obliteration of pulmonary arteries, and atelectasis results from progressive obliteration of the bronchi.

Gynaecologia, Basel

123:1-72 (Jan.) 1947

Diagnosis of Cancer of Female Genitalia. D. Gadola.—p. 1.
Pelvic Kidney. B. Gondos.—p. 33.
*Streptococcic Sepsis in a Newborn Infant Whose Mother Had Mastitis During Pregnancy. M. Fukas.—p. 53.
Rupture of Membrane Before Onset of Labor. E. Tonkes.—p. 58.

Streptococcic Sepsis of a Newborn Infant Whose Mother Had Mastitis During Pregnancy.—Fukas reports the history of a male infant who developed symptoms on the third day of life and who died on the fifth day of streptococcic septicemia. Necropsy corroborated the diagnosis. The mother had had mastitis of the left breast for two months before her confinement. It is assumed that streptococci were transmitted to the infant in utero by way of the blood stream. The general infection developed after the antibodies derived from the mother had been exhausted.

Arch. Urug. de Med., Cir. y Especial., Montevideo

29:429-590 (Nov.-Dec.) 1946. Partial Index

*Traumatic Intracerebral Hematoma: Cure After Operation. E. Vigil Sóñora.—p. 528.
*Tuberculosis of Mamma. A. Pou de Santiago.—p. 566.

Traumatic Intracerebral Hematoma.—An adult showed signs of cerebral injury twenty-four hours after having sustained cranial trauma. Diagnosis of intracerebral hematoma was made on evidence presented by encephalography, namely the displacement of the pineal body and of the left ventricle. The operation consisted in evacuation of hematoma near the ventricle. One week later the cerebral symptoms reappeared. Encephalography showed reformation of the hematoma, which on this occasion was drained by aspiration, resulting in final cure of the patient.

Tuberculosis of Breast.—Pou de Santiago reports the occurrence of primary tuberculosis of the breast in 3 adult women. In 1 of the patients the clinical diagnosis was confirmed by the results of the roentgen examination of the canalicular system of the breast by Leborgne's method. The therapy consisted in surgical removal of the breast and the general therapeutic regimen.

Revista Medica de Chile, Santiago

75:151-216 (March) 1946. Partial Index

*Paralytic Inguinal Hernia. R. Zúñiga Latorre.—p. 195.

Paralytic Inguinal Hernia.—This condition, a relatively frequent complication of appendectomy, has not been previously described. It is due to paralysis of the muscles of the inguinoabdominal region caused by lesions to nerves during the operation. The nerve lesion manifests itself by a permanent neuralgia following the operation and with later formation of an inguinal hernia. Prevention consists in avoiding injury to the nerves. The treatment of the condition requires freeing the nerves from the scar and the performance of a Bassini herniotomy employing a pedicle of fascia from the patient's own larger oblique muscle. Seven cases are reported.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:789-844 (April 5) 1947

Treatment of Agranulocytosis. W. H. Borst.—p. 796.
Dicrotism of Pulse. A. A. van der Kroon.—p. 801.
*Gonorrheal Peritonitis in Upper Part of Abdomen. L. W. van Ravesteyn.—p. 808.
*Acute Pancreatitis as Complication of Epidemic Parotitis. J. J. Spittuler.—p. 814.

Gonorrheal Peritonitis.—The first of the 2 patients presented by van Ravesteyn was a woman aged 29 who suddenly developed signs of peritonitis in the upper abdomen on the right side. The patient had gonorrhea and an old salpingitis. The symptoms, which were diagnosed as gonorrheal perihepatitis, were counteracted by 160,000 units of penicillin administered by eight intramuscular injections in the course of a day. The symptoms of the second patient were counteracted by 200,000 units of penicillin. Discussing the various clinical pictures that can be produced by the gonococcus within the peritoneum, Ravesteyn points out that gonorrheal perihepatitis was described as a separate entity by Stajano in 1920. Trauma in the form of surgery, gynecologic examination, coitus or irrigation may be etiologic factors. The differential diagnosis must consider cholecystitis, pyelitis, nephrolithiasis, appendicular subphrenic abscess, pneumonia of a lower lobe and extrauterine pregnancy.

Acute Pancreatitis as Complication of Mumps.—In the course of an epidemic of mumps in 1946 it was realized that mumps is not as harmless a disorder as it is generally assumed to be. Spittuler reports that a boy aged 8 exhibited the symptoms of acute pancreatitis with high fever, severe pain in the epigastrium and in the left hypochondrium with radiation toward the back and vomiting. The symptoms subsided in five days. Pancreatitis usually develops about a week after the parotid swelling, but it may also precede it. Examination of the urine for the presence of sugar is advisable for some time after the recovery of the patient.

Book Notices

The Philosophy of Insanity. By a Late Inmate of the Glasgow Royal Asylum for Lunatics at Gartnavel. With an Introduction by Frieda Fromm-Reichmann, M.D. Cloth. Price, $2.50. Pp. 116. Greenberg, Publisher, 201 E. 57th St., New York 22, 1947.

This remarkable autobiographic commentary was written in 1860 by an anonymous recovered psychotic patient. Dr. Fromm-Reichmann, interested in exposing the thesis that the psychologic experiences and modes of expression of psychotic, neurotic and "so-called normal" individuals differ not in kind but in degree, has uncovered this work, which offers impressive support to her thesis. While the author, a layman, reflects in his writing a number of the misconceptions current to the psychiatric thinking of his time, his concept of mental disorder is in great measure in keeping with modern thinking. He insists that "the line that separates sanity from insanity is invisible, and there are as many kinds and degrees of the disease as there are sufferers."

The description of the delusional mental state during recovery from a manic attack has the peculiar quality dependent on the intense suffering experienced by the writer. His remarks on the care of the insane, his discussion of popular misunderstanding about the nature of mental disorder and the stigmatization of the mentally ill might appear in a present day publication. His discussion of qualifications of hospital attendants for the insane and standards of pay should be read by the legislators who provide funds for our public institutions for care of the mentally ill. The author's personal experience in Gartnavel indicates a very high order of care for the patients in this institution nearly a hundred years ago.

The incisive, at times epigrammatic, style of writing reflects the author's sharp perspective and deep feeling about the sufferings created by the distortions of the mentally ill. "There is nothing more wicked than virtue out of its wits, nothing more cruel than humanity run mad. . . . Nothing assimilates man more closely to the fiend than religious fanaticism."

In the discussion of bodily and mental health, says the writer, "In every description of sickness and pain which afflict the body the mind is a participator"; so it appears that psychosomatic concepts have a long history. This book is well worth the reading time of every physician and medical student.

Éducation physique, sports et tuberculose pulmonaire. I. La tuberculose des sportifs. II. La prophylaxie de la tuberculose pulmonaire par les exercices physiques. III. La gymnastique et les sports dans le traitement de la tuberculose pulmonaire. Par le Docteur Pierre Weiller. Paper. Pp. 320, with 31 illustrations. Vigot Frères, 23 rue de l'École-de-Médecine, Paris 6ᵉ, 1946.

This volume is devoted to pulmonary tuberculosis as it occurs in persons engaged in physical education and athletics. The author, having been an athlete himself, became interested in this subject, and, having been the physician of several societies of physical education and sports, he had an unusual opportunity to observe tuberculosis among those engaged in these activities. The histories of 207 cases are reported. The author is particularly interested in determining what part athletics plays in the development of pulmonary tuberculosis. This he found extremely difficult. For example, in one person who held a regular position engaged in several sports during his spare time the question was whether his tuberculosis was due to the regular job or to the sports. A boxer who became indignant because he had been defeated in a match began to lose weight, to cough and to develop serious pulmonary tuberculosis. All cases in which tuberculosis developed in athletes in whom he thought some such circumstance might have precipitated the disease, rather than the sports, were eliminated.

One hundred and forty-six cases are presented which the author considers valuable from the point of view of athletics having played a role in the development of the disease. Twenty-seven cases occurred among professionals in physical education and athletics. Therefore the author points out that tuberculosis does not respect such persons. The average age of these patients was from 30 to 35 years. With two exceptions the disease was of long standing—from four to fifteen years. The author states that the impression one gets from the study of pulmonary tuberculosis among the professional sportsmen is that it is a slowly progressive disease. He warns that they must be kept under the close observation of the physician, as the disease in some of them becomes contagious and may contaminate their colleagues.

One hundred and nineteen cases of tuberculosis among amateur athletes are presented. Therefore it is strongly recommended that adequate examinations be made periodically of every amateur. From a description of these 119 cases it becomes apparent that they do not seem to be significantly different from those which one regularly sees drawn from the general population. The treatment administered, both among the professional and among the amateur athletes, is discussed in considerable detail, and a number of x-ray reproductions are presented to show lesions before and after treatment.

The second part of the book is devoted to the prophylactic value of physical education and athletics in pulmonary tuberculosis. The author believes that much tuberculosis can be prevented by certain technics in this field. Part three consists of a discussion of physical education and athletics in the treatment of pulmonary tuberculosis. Along with the benefits which he thinks may be accomplished he calls attention to certain dangers.

The Preservation of Proteins by Drying, with Special Reference to the Production of Dried Human Serum and Plasma for Transfusion. By R. I. N. Greaves. Medical Research Council Special Report Series No. 258. Paper, 2s. Pp. 54, with 25 illustrations. His Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, 1946.

Increasing use of proteins in biologic research and their rapid adoption in therapy have focused attention on the problems concerned with the handling of proteins. If protein preparations are to have a wide clinical use distribution must be made in a convenient and stable form which permits adequate standardization and insures reproducible results. A notable contribution to this requirement is the development of methods for reducing proteins to the dry state with a minimum of alteration in chemical or biologic properties. This book presents the application of vacuum drying from the frozen state to the problem of protein preservation. The author has made important contributions to the field and presents here the results of his own research together with the application to the large scale drying of human serum and plasma during the past six years in England. He reports on the drying of over 350,000 units of plasma and serum, from June 1940 to September 1945 with an overall loss of less than 0.5 per cent. The historical review will be valuable to those who are interested in the development of vacuum drying. Probably by necessity it omits some of the more recent developments in the United States; although many of them are related to large scale drying of penicillin, they are directly applicable to the drying of proteins. Although most of the theory of the kinetics of vacuum systems is omitted, the experiments, observations and practical applications recorded represent a contribution to a field in which opinions are still more numerous than the results of controlled experiments.

A History of Scientific English: The Story of Its Evolution Based on a Study of Biomedical Terminology. By Edmund Andrews, M.D. Cloth. Price, $7.50. Pp. 342, with 18 illustrations. Richard R. Smith, 20 E 39th St., New York 16, 1947.

This book was written by a surgeon of the first rank, a scholar of broad interests and a gentleman of character, attributes that might be anticipated in the son of E. Wyllys Andrews and the grandson of Edmund Andrews. When Dr. Edmund Andrews died late in 1941 he had completed the manuscript which has now been published. Arno Luckhardt has written a foreword in which he admits that he put off reading the bulky manuscript for some time, particularly since the title did not portend exciting reading. But the perusal of the first few pages sufficed to impel him to continue the task with growing enthusiasm. Actually the book affords delightful reading and, while quite advanced and thorough in all that pertains to the knowledge of philology, its breadth, the versatility of its approach, the wide sweep of the correlations, the skilful blending of personal observation and knowledge with accepted fundamentals of the science of words all contribute to make this an unusually interesting book.

It is fortunate that the professional life of the author centered about medicine and surgery, for he has made use of the development of the medical sciences to illustrate the growth of language in general, and here his contributions are many and original as well as authoritative. One is apt to forget that words are the only tools that we possess in our mental workshop and so the study of words is something more than merely of historical or vocational interest.

Quite apart from its textual content, the contribution is decidedly a personal and a very human one. Andrews' wide interests in diverse fields are constantly brought into play by way of illustration, by allusion and interpretation. So, for instance in his excellent discussion of the growth and development of the languages of the Mediterranean basin, the impact of the Aryan invasion, and in tracing the growth and development of our modern languages from these origins. Here Andrews could with profit turn to the Polynesians to illustrate in a living model what probably happened two or three thousand years ago among people who have vanished. But it is by just such fascinating excursions that Andrews provided the necessary contrast, the alluring diversions that make the reading of the work a pleasure and not a chore.

In all this Andrews is revealed not only as the sound scholar and broadly interested scientist but as the very human person with a grand sense of humor, a keen appreciation of organic continuity and integration, and the able writer of a truly unique contribution to both the science of medicine and the science of words. It is a contribution in which we can take pride.

The Peripheral Circulation in Health and Disease: A Study in Clinical Science. By Robert L. Richards, M.D. Foreword by J. R. Learmonth, C.B.E., Ch.M., F.R.C.S.E., Professor of Surgery and Clinical Surgery, University of Edinburgh, Edinburgh. Cloth. Price, $6. Pp. 153, with 104 illustrations. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2, 1946.

This monograph contains studies on peripheral circulation in normal limbs, in the limbs of those suffering from peripheral vascular disease, from peripheral nerve injuries or from exposure to cold. The author reviews the evolution of knowledge in this field and builds his own observations on this foundation. Most valuable are his observations on the vascular changes after peripheral nerve injuries. These were made in a peripheral nerve injury center which contained about 350 patients. Equally lucid and instructive are the studies on immersion limb. This is a logical, lucidly written book, excellently printed and illustrated. It is representative of the best type of clinical physiology, in which Sir Thomas Lewis excelled. For residents and young vascular surgeons there could be no better instruction in fundamental knowledge or stimulus for future research.

Actions of Radiations on Living Cells. By D. E. Lea, M.A., Ph.D., Prophit Student of the Royal College of Surgeons, Cambridge. Cloth. Price, $4.50. Pp. 402, with 61 illustrations. Macmillan Company, 60 Fifth Ave., New York 11; Cambridge University Press, 200 Euston Rd., London, N. W. 1, 1947.

The author states that his intention in writing this book was to give an account of certain of the simple and most fundamental actions of x-rays through ionizing and radiations on living cells. This book is one of an increasing number of publications that are being written. The college student and the medical student of the future must be familiar with atomic and nuclear energy and the mechanism of their radiations. The text is difficult to understand, even though the author states that large portions of it have been written in an elementary fashion. The study of effects of radiations on viruses, genes and chromosomes is difficult to understand and therefore will be difficult reading for the average radiologist. The book does not contain any of the investigations on the radioactive isotopes and, looking over the bibliography, one sees an occasional American author who has been quoted on his work in radiobiology. However, many radiobiologists and geneticists are not included in the bibliography, especially some of those who have been contributing to the literature in the last few years. This estimate may not seem fair to the author, but it is felt that the average radiologist and radiotherapist who is using x-rays, gamma rays and radioactive isotopes will find the information contained in this book difficult to understand.

Theory of Occupational Therapy. By Norah A. Haworth, M.A., M.R.C.S., L.R.C.P., Industrial Medical Officer, and E. Mary Macdonald, Principal, Dorset House School of Occupational Therapy. With foreword by Sir Robert Stanton Woods, M.D., F.R.C.P., Physician in charge of the Department of Physical Medicine at the London Hospital, London. Third edition. Cloth. Price, $2.50. Pp. 158, with 75 illustrations. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2, 1946.

The value of occupational therapy in the therapeutic regimen for mental patients and those with tuberculosis and heart disease is widely accepted. More recently it has proved useful together with physical therapy in regaining function in extremities affected by disease or trauma. This short book outlines for the student occupational therapist the theory of application for these various groups of patients, including suggested lists of projects which may be used and selected illustrations of apparatus. Although primarily written for occupational therapists, the physician who prescribes occupational therapy will find this a convenient work of reference.

The Unconquered Plague: A Popular Story of Gonorrhea. By Harry Wain, B.S., M.D., M.S.P.H. Paper. Price, $1.50. Pp. 119. International Universities Press, 227 W. 13th St., New York 11, 1947.

With a matter of fact attitude that is more impressive than that taken by the alarmists, the author of this little volume has done an excellent job of presenting the problem of venereal disease control, and specifically gonorrhea. It is a dispassionately frank discussion of the way in which this "commonest plague of mankind" is perpetuated. There is no false overemphasis on the sordid aspects but neither is their importance overlooked. The historical data are presented in a chronological account that makes extremely interesting reading. The volume contains ten chapters in which the great antiquity of gonorrhea and its persistence down through the ages, its identification but resistance to earlier treatment methods, the ways in which it may affect the human body, the great hope for its final elimination as a result of the advent of penicillin, the prostitution problem and facts about prophylaxis are presented in a smoothly written text. A brief glossary provides helpful guidance. The volume can be recommended by the physician to lay readers with the certainty that much helpful orientation regarding the problem of gonorrhea will be provided.

The Problem of Lupus Vulgaris. By Robert Aitken, M.D., F.R.C.P.E., F.R.S.E., Physician to the Skin Department, the Royal Infirmary of Edinburgh. Cloth. Price, $4. Pp. 69, with 31 illustrations. William Wood and Company, Mt. Royal & Guilford Aves., Baltimore 2, 1946.

"This small book is written in an attempt to help the sufferer from lupus and inasmuch needs no apology. It presents the experience of thirty years' practice in the treatment of such patients." With such a humble beginning to the preface of this book one hesitates to be critical. However, for all it contributes to the knowledge of "lupus"—it is assumed that the author means lupus vulgaris—it might as well have been written thirty years ago. The illustrations are without value because they are badly out of focus for the most part and the color reproductions are meaningless. There is no discussion of the histopathology of the disease or of the modern methods of treatment. It is difficult to understand why an American publisher would offer this volume at this time for this price.

Et Bidrag til Kampen mod Kræften? Udarbejdet paa Basis af Forsøg udført i Aarene 1939-46. A Contribution to the War Against Cancer? Based on Experiments Carried out in the Years 1939-46. By H. G. Garde. Paper. Pp. 80, with 20 illustrations. Ejnar Munksgaard, Nørregade 6, Copenhagen, 1947.

This booklet was privately printed by the author, Mr. H. G. Garde of the United Steamship Company Limited of Copenhagen. It describes an effort, greatly hampered by wartime conditions in Denmark, to gather data in support of the theory that "cancer may be a disease which arises because the human cellular system, on account of deviations in the metal salt content of the blood regarded from the point of view of high frequency, is unable to utilize the energy conveyed thereto by magnetic oscillations which, coming from space, act upon us night and day." While the sincerity of the author is quite apparent, the accuracy of the methods used in the various determinations is open to question.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

RESUSCITATION OF THE ASPHYXIATED

To the Editor:—I should like to inquire as to the present status of oxygen versus oxygen-carbon dioxide mixtures for use in emergency resuscitation of the asphyxiated. Considerable difference of opinion is present in various textbooks on this subject. For example, Johnstone in "Industrial Medicine" recommends the use of carbogen, while Flagg in his "Art of Resuscitation" recommends the use of pure oxygen. Similar differences of opinion appear in other textbooks, and an informal query among various anesthesiologists has raised a similar divergence of opinion. Specifically, my problem relates to the resuscitation of persons overcome by carbon monoxide as a result of exposure to illuminating gas and to the resuscitation of persons overcome in burning buildings, a mixture presumably of carbon monoxide, carbon dioxide, smoke and irritating gases. I should also like to inquire as to the cause of a phenomenon which is a common experience among firemen at the local department and which I myself have observed on numerous occasions. Frequently when firemen have been working in a smoky atmosphere or one with a low oxygen content they feel fairly well as long as they continue exposed; or, if they feel faint, they are almost invariably able to reach the street. But as soon as they are exposed to fresh pure air, they lose consciousness with extraordinary quickness.

William D. Claudy, M.D., Washington, D. C.

Answer.—The following statements are based on a study made under strictly controlled conditions on groups of dogs large enough to determine by statistical means whether a difference observed would be likely to occur by chance. Only those results obtained when the gas under study was given by mechanical means to insure a relatively constant minute volume of pulmonary ventilation will be cited. Eighty-two dogs were exposed to 0.3 per cent carbon monoxide in air until the first antemortem gasp occurred and then were "resuscitated" with 100 per cent oxygen; 84 dogs similarly treated were "resuscitated" with 7 per cent carbogen (7 per cent carbon dioxide and 93 per cent oxygen). Sixty-nine per cent of the oxygen treated and 66 per cent of the carbogen treated groups survived, and the incidence of neurologic sequelae was 34 per cent in the oxygen and 35 per cent in the carbogen group. In the case of uncomplicated obstructive asphyxia a significant difference was not found in the immediate percentage of survival when 100 per cent oxygen, 7 per cent carbogen or even air was used.

As far as immediate survival is concerned, the important point is to get oxygenated blood to the heart as quickly as possible. This is more dependent on the minute volume of oxygen that is moved into and out of the lungs per unit of time without injuring the lungs than on any other factor. The most important factor in determining the incidence and severity of neurologic sequelae with equivalent degrees of harmfully low oxygen saturation of the blood is the duration of the anoxia.

It is true that carbon dioxide increases somewhat the rate of clearance of carbon monoxide from the blood; but the results showed that the difference in rate of clearance between 100 per cent oxygen and 7 per cent carbogen is of no real physiologic significance in reference to survival or sequelae. Carbon dioxide stimulates the "normal" respiratory center; but it does not stimulate the definitely anoxic respiratory center, and the resuscitation of the respiratory center is of secondary importance in resuscitation. The importance of starting the respiratory center has been overemphasized. The important point is to get oxygen to the heart and brain as quickly as possible by providing as much pulmonary ventilation for the first few minutes as the lungs will take without rupture. Whether the gas is 100 per cent oxygen, 7 per cent carbogen or air is without real significance, except that a high concentration of oxygen would be advantageous in the presence of pneumonosis or pulmonary edema.

Persons are more likely to collapse after entering the air from a smoke filled place for two reasons: one, the irritating gases and excitement reflexly stimulate the circulation, and two, which is probably more important, the effects of anoxia accumulate and are not pronounced enough to cause collapse until fresh air is reached. To this may be added the "lightheadness" caused in a normal person by taking several deep gasps of air in rapid succession. These explanations, however, are theoretical, and no one has actually proved them to be true.

TREATMENT OF CARDIOVASCULAR SYPHILIS

To the Editor:—A white man aged 56 has syphilitic heart disease with aortic insufficiency without signs of coronary involvement or heart failure. He has received bismuth injections weekly for the past year. He has not had arsenicals or other treatment. The heart is 0.5 cm. increased in transverse diameter. Should this patient be given any other medication and for how long? How long should bismuth be continued? Repeated blood Mazzini and Kolmer serologic tests are 4 plus positive.

M.D., New Jersey.

Answer.—A patient such as described in the query without congestive heart failure and with a year of preparatory heavy metal treatment probably would be benefited by the cautious and judicious use of a trivalent arsenical. In selection of drug and route there is a choice between an intramuscular preparation such as bismuth arsphenamine sulfonate (bismarsen) or an intravenous preparation such as a phenarsine derivative (mapharsen or dichlorphenarsine hydrochloride), either of which would be effective. Subtherapeutic doses should be used and the patient should be carefully observed for the first three or four weeks of treatment for any evidence of intolerance. Bismarsen should be given once a week starting with a dose of 0.05 to 0.1 Gm. intramuscularly for the first month dissolved in the solvent supplied, after which the dose may be increased to 0.2 Gm. once a week. Forty weeks of continuous treatment with bismarsen, followed by a course of ten weeks of bismuth subsalicylate could form the second year of treatment in your patient.

Oxophenarsine hydrochloride (mapharsen), if used instead of bismarsen, should be employed in weekly dosage intravenously of 0.01 to 0.02 Gm. for the first month, followed by a maximum weekly dose of 0.03 Gm. Courses of ten weeks of such treatment alternated with eight weeks of bismuth subsalicylate continuously throughout the next year would be a satisfactory alternative type of treatment to the one described.

If the patient is intolerant to arsenicals they should be stopped and treatment continued with bismuth subsalicylate alone. In general, however, patients with cardiovascular syphilis do better and have a longer life expectancy if it is possible to employ one of the trivalent arsenicals. Total treatment should cover a period of not less than two years, but further specific therapy beyond that time should be suited to the individual case.

Penicillin is considered at present to be contraindicated in cardiovascular syphilis, though adequate study of its use after prolonged preparatory treatment has not been carried out. The presence of a repeatedly positive blood serologic test is the usual finding in cardiovascular syphilis, and it would be the exception rather than the rule that it would be reduced to negativity by treatment.

VAGINAL TAMPONS DURING MENSTRUATION

To the Editor:—What is the present consensus regarding the use of vaginal tampons during menstruation?

M.D., Iowa.

Answer.—The question of vaginal tampons is not settled. Many writers are enthusiastic about the use of these tampons but others are rabidly against them. K. J. Karnaky (*West. J. Surg.* **51**:150 [April] 1943) examined 218 women who had used tampons regularly during menstruation for a year or more and failed to find any irritation, discharge, vaginitis or cervicitis. On the contrary, in many cases in which vaginal disturbances were present before the use of the tampons, normal conditions were restored. In no instance could evidence of obstruction of the flow be obtained, because none of the women developed uterine cramps. M. J. Thornton (*Am. J. Obst. & Gynec.* **46**: 259 [Aug.] 1943) interviewed and examined 110 women who used vaginal tampons for absorption of the menstrual flow every two months from one to two years. There was no evidence of any irritation of the vagina or the cervix. No woman acquired a trichomonas or yeast infection during this investigation. The incidence of trichomonas infection was 3.63 per cent, which is less than the average given in most statistics. J. M. Singleton and H. F. Vanorden (*West. J. Surg.* **51**:146 [April] 1943) sent a questionnaire to 3,400 doctors in the United States and Canada to determine their attitude on the use of tampons as a menstrual hygiene measure. The physicians were 4 to 1 against recommending menstrual tampons. There was almost unanimous opinion against tampons in virgins in the belief that it created sex consciousness and might stimulate eroticism and the habit of masturbation. Also the difficulty of application was stressed. Twenty per cent of the physicians reported cases presenting pathologic changes varying from mild vaginitis to pelvic infection. The authors conclude that there is a definite potential source of infection in the habitual or occasional practice of menstrual tamponage and that preexisting infections are thereby aggravated.

R. L. Dickinson (The Journal, June 16, 1945, p. 49) says that sales of tampons make up about 10 per cent of sales of commercial napkins. The sales are on the increase. In 1943 five times as many tampons were sold as in 1937. A 1944 survey in twenty-six cities covered interviews with 2,500 women purchasing two kinds of menstrual protectives. Of these 24 per cent used tampons, including the third with exclusive dependence and the two thirds with supplement of a napkin part of the time. This use was equally distributed between married and single women.

Dickinson concludes that the physician asked by the patient about tampons can answer that healthy women with average flow are using them increasingly with comfort but may also need the outer guard the first day; second, that doctors lack reports on a series of local examinations on those who reject them after trial to discover the reasons, and, third, that in her own case her local examination will show, or has shown, absence of any undue tenderness, inflammation, cramps or lack of room which could defer or prevent the use of the tampon.

A new disturbing factor in the use of vaginal tampons was presented by A. E. Taft (*West. J. Surg.* **51**:342 [Aug.] 1943). He found inclusion bodies in the vaginal epithelium and suggests that they may arise from use of commercial tampons and vulvar pads. This is indicated by the findings of Conant, Wagner and Rackemann that a great part of the cotton, wool, kapok and other materials used in furniture, pillows and mattresses contains spores. They were found without exception in kapok, a vegetable fiber. Some of the tampons contain a core of jut, which is also a vegetable fiber. Direct information from the manufacturer of a group of these products is that, "as far as we know, sterilization is not practiced on any tampon due to the fact that it has been found to impede absorption." Chemical treatment and high pressure are depended on to eliminate the organisms present in raw cotton. The two necessary factors for the germination of spores are warmth and moisture, both of which would be supplied in the use of tampons or pads.

TRICHINOSIS

To the Editor:—A white married woman aged 34 still has evidence of trichinosis after nineteen weeks. She drives her car and is living a fairly normal life except that she tires easily and frequently develops small painful areas almost anywhere in her body from the neck to her ankles. Sometimes red spots develop, some flat and some raised like an urticaria. These do not itch but are painful. Pains in the muscles practically disappeared three or four weeks ago but now have returned. She is eating well and gets vitamin B_1 in heavy doses and liver injections; her bowels move daily with excellent results. The urine is normal in amount, chemical tests are normal, that is, the specific gravity is 1.018, sugar negative, albumin negative and reaction slightly acid. I am sure of the diagnosis from the positive test I got. The eosinophil count was up. At present eosinophils are normal. The blood picture is normal. Can you advise me regarding further treatment?

Elmer W. Clarke, M.D., Norton, Mass.

Answer.—If the patient has proved trichinosis, there is no specific therapy available for the disease. It is not unusual for patients to have intermittent aches and pains of the striated muscles for months after the tissues have been invaded. The type of skin lesion of the patient described is an unusual manifestation of chronic trichinosis. Supportive measures for the relief of pain are all that can be recommended.

TREATMENT OF SPASMODIC TORTICOLLIS

To the Editor:—A white man aged 50 has had torticollis since September 1938. The head is pulled down and to the right and there is a compensatory spinal curvature. Treatment has included diathermy, foreign protein, hypnotism, section of the left spinal accessory nerve and muscle stretching. As a test before operation he was anesthetized with evipal and the neck was straightened as the muscles relaxed. Although never a drunkard, he drank more than moderately and has been diagnosed as having a possible resultant cerebral lesion as the cause of his wry neck. There are no other signs of any systemic disease. Mental adjustment to life is good but to the torticollis poor.

Ellis M. Markell, M.D., Harrison, N. Y.

Answer.—Torticollis is one of the more poorly understood and most difficult conditions to treat in the field of medicine. Although many such cases are ascribed to psychogenic factors, these patients usually respond poorly and at best temporarily to psychotherapy. Usually the best that psychotherapy accomplishes is to make them accept their disability philosophically and become better adjusted to the situation. Certainly many of these cases are the result of a lesion in the basal ganglions of the brain. In most instances the lesions are encephalitic in nature. Medical therapy is of little avail. In a few cases surgical treatment has proved beneficial. However, section of the spinal accessory nerve alone is seldom adequate surgical treatment. The best results have been seen when section of the spinal accessory nerve has been combined with section of the upper three anterior roots of the cervical spinal cord on both sides. This is a major procedure and should be attempted only by a skilled neurologic surgeon. Furthermore, it is too much to expect that the results of such a destructive procedure could be a perfect cure. Theoretically extirpation of the representation of the neck from the contralateral motor area of the cerebral cortex should give relief from this condition, but such a drastic surgical procedure has never been thoroughly tried. The treatment of spasmodic torticollis is far from satisfactory, and the majority of patients must become adjusted to their disability as best they can.

UNEQUAL MATURATION OF YOUNG GIRL

To the Editor:—I have under my care a girl aged 15 years. Her development has not progressed according to expectations. From the waist down her development is perfect, but the upper half of her body isn't matured for her age. She is thin; the left breast is much smaller than the right, yet even this one is not fully developed. The right incisor is a milk tooth and has no permanent one under it. She is alert, bright and active in everything, including sports and social activities. Is there any form of therapy that might help develop her without affecting her endocrines? I have hesitated to use the estrogens because her menses are normal. I am afraid of antihormones and antipituitary effects. It all sounds like hypo-ovarian function but I have preferred to wait and see what nature would do. Am I justified in continuing this way?

M.D., Connecticut.

Answer.—Maturation of the various parts of the body frequently proceeds in an irregular manner, so that if viewed at any one stage of development the patient may seem distinctly abnormal. This irregular maturation may even be manifested, as in the patient described, by unequal size of the breasts. Usually the size and form of the body attained at maturity are not far from normal in such cases, and considerable change may take place after the age of 15 years. If the menses are normal in all respects there is little reason to suspect hypo-ovaria, although endometrial biopsy would be required to exclude anovular bleeding with certainty.

The rare condition known as progressive lipodystrophy is to be considered. This is characterized by a progressive thinning of the face, upper part of the body and arms, caused by disappearance of subcutaneous fat in these parts beginning in childhood. In facial hemiatrophy and sometimes in scleroderma there is a similar but more complete loss of subcutaneous tissue. There is no adequate treatment for any of these entitites.

Whatever the diagnosis, observation is advised. If the condition progresses, it is likely to be lipodystrophy; if symptoms regress, the patient is probably a normal person with somewhat irregular maturation. No endocrine therapy is indicated.

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TREATMENT OF RADIUM BURN

To the Editor:—A man aged 50 had an epithelioma on the dorsal surface of his right hand, which was treated with radium in 1942. A violent radium burn resulted which is now about ½ inch in diameter. A raw surface around the lesion is adherent to the dorsal surface of the hand. A biopsy Dec. 5, 1946 eliminates the possibility of cancer. What is the proper treatment?

L. G. Blackmer, M.D., Hooker, Okla.

Answer.—The best treatment for a case like that described in the query is plastic surgery. One may expect complete healing in the hands of a competent plastic surgeon.

The use of radon ointment has recently been advocated in the skin lesions due to the roentgen ray or radium but convincing evidence that it is effective is lacking. The danger of malignant degeneration in a trophic lesion such as that described in the query renders prompt removal the only safe method of treatment.

LYMPHOBLASTOMA AND PREGNANCY

To the Editor:—A white woman aged 37 developed a reticulum cell lymphosarcoma following a normal first pregnancy and labor. Symptoms developed one week post partum. Is there any known relationship between pregnancy and lymphoblastoma? Have any of the endocrine secretions been known to affect the course of this disease?

M.D., New Jersey.

Answer.—There is no evidence to show that pregnancy has any effect on the development or progression of lymphoblastoma. It has not been demonstrated that endocrine secretions have any effect on the course of lymphoblastoma.

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THE LONGEVITY AND MORTALITY OF AMERICAN PHYSICIANS, 1938-1942

A Preliminary Report

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and
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The centenary of the American Medical Association is a good occasion to review the longevity and mortality of physicians. It is valuable to learn what the men and women of the profession, dedicated to protect the health of others, have accomplished in protecting themselves. Such information is of importance for many reasons. It bears directly on the problem of replacement in the profession. From the economic point of view, the untimely death of physicians represents a material waste because of the large investment of time and money required to enter the field of medicine. Knowledge of the causes of death of physicians may well point the way to effective preventive measures.

The present study is based on the records of active and retired living physicians and on their deaths during the five year period 1938 through 1942 on file with the American Medical Association.[1] At the middate of this period, July 1, 1940 there were 175,159 living physicians in the country. Their distribution, according to sex and age is presented in table 1. Slightly more than one half of the physicians were 45 years of age or over. The average age of the men is 48.0 years, about one year less than that of women physicians. Of the total physicians entering this study, approximately 165,000 were actively engaged in their profession according to the census of 1940, the rest being for the most part on the retired list; the average age of these active physicians is 46.0 years. As might be expected, this average is considerably higher than that of all employed persons, namely 38.6 years.

A LIFE TABLE FOR PHYSICIANS

The first result emerging from the present investigation is a life table for physicians separately for men and for women. This life table shows the average years of life remaining at each present age; this is more commonly designated "the expectation of life." Speci[illegible]en values of the expectation of life for physicians are [illegible] in table 2. For purposes of comparison there [illegible]n included corresponding values of expectation of life for white persons in the general population, also for the period 1938-1942.

The average young physician entering his profession at age 25 has forty-three and a half years of life before him. This roughly represents the average professional career of physicians under current conditions of mortality. On reaching age 35 he still has on the average almost as many years remaining as he has already lived. In midlife, at age 45, the average physician may expect a further quarter century of lifetime. Almost twelve additional years of life remain to the average physician attaining age 65, a frequent age for retirement. Women physicians start out with an advantage of three and a half years over men at age 25, but this is reduced to less than one and a half years at age 65.

Young physicians have only a slightly greater expectation of life than white persons of the same ages in the general population. At age 25 physicians have the better outlook by about one quarter of a year, but this small advantage is lost even before midlife is reached. From age 35 onward the prospective lifetime for physicians is somewhat less than that for white persons in the general population, but the differences are not significant.

The present experience may be compared with an earlier life table for physicians for 1925.[2] For example, at age 30 the expectation of life has increased from 38.01 years in 1925 to 38.86 years in 1938-1942, a gain of 0.85 year. This improvement was not quite as great as that for white males in the general population of the country, who experienced meanwhile a gain of 1.35 years. The improvement in longevity for physicians was confined largely to ages under 50 years. The higher ages showed very little change from the earlier to the later period.

MORTALITY FROM ALL CAUSES COMBINED

In this preliminary study consideration is limited to the experience of the male physicians, who constitute 96 per cent of the total. Among all male physicians at ages 25 and over the death rate was 20.5 per thousand during the period 1938-1942, i. e. about 2 per cent per annum. Considered with regard to age, the death rates advanced from 1.7 per thousand at ages 25 to 34 years to 10.8 at ages 45 to 54 and then to 129.1 at ages 75 and over. These findings may be compared with the results of the study by Emerson and Hughes, which was based on records of the American Medical Association for 1925.[3] As is indicated in table 3, male physicians under 45 experienced a 37 per cent decrease in their mortality from 1925 to 1938-1942, while those at the higher ages showed a mixed picture. At ages

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[illegible] istical Bureau of the Metropolitan Life Insurance Com[illegible]

[illegible] Section on Preventive and Industrial Medicine and Public [illegible] the Ninety-Sixth Annual Session of the American Medica[illegible], Atlantic City, N. J., June 12, 1947.

[1] Th[illegible]terial was compiled in the offices of the Association under t[illegible] dir[illegible]pervision of Dr. Roscoe G. Leland, formerly Director of the [illegible]dical Economics, whose sustained interest and cooperation sinc[illegible]t was initiated, late in 1942, made this study possible. Dr. Lel[illegible] successor, Dr. Frank G. Dickinson, made painstaking efforts t[illegible]racy and completeness of the records

[2] Dublin, L. I., and Lotka, A. J.: Length of Life, New York, Ronald Press, 1936, p. 226.

[3] Emerson, H., and Hughes, H. E.: Death Rates of Male White Physicians in the United States, by Age and Cause, Am. J. Pub. Health. **16**: 1088 (Nov.) 1926.

45 to 54 an improvement of 9 per cent is shown; but this was offset by a setback of 11 per cent at 55 to 64. The small increase at ages 75 and over may be due to a rise in the average age of physicians within this age range. Some satisfaction may be found in the fact that the rate of improvement in mortality among the younger physicians was greater than that for white males generally. On the other hand, there was some decrease in mortality among white males at the older ages in the general population.

TABLE 1.—*Physicians in the United States*

Distribution of the Living as of July 1, 1940 and of the Deaths from 1938 to 1942 According to Sex and Age

Age Group *	Living as of July 1, 1940			Deaths, 1938-1942		
	Total	Men	Women	Total	Men	Women
	Number					
All ages	175,159	168,266	6,893	17,828	17,169	659
Under 25	1,078	1,015	63	4	4	.
25-34	41,393	39,955	1,438	357	345	12
35-44	40,029	38,313	1,716	792	763	29
45-54	31,314	30,120	1,194	1,662	1,625	37
55-64	31,352	30,342	1,010	4,152	4,078	74
65-74	22,186	21,184	1,002	5,813	5,616	197
75-84	6,788	6,362	426	3,894	3,662	232
85 and over	1,019	975	44	1,152	1,075	77
Unknown age	.....	.....	..	2	1	1
	Per Cent Distribution					
All ages	100.0	100.0	100.0	100.0	100.0	100.0
Under 25	0.6	0.6	0.9	†	†	..
25-34	23.6	23.8	20.9	2.0	2.0	1.8
35-44	22.8	22.8	24.9	4.4	4.4	4.4
45-54	17.9	17.9	17.3	9.3	9.5	5.6
55-64	17.9	18.0	14.7	23.3	23.8	11.2
65-74	12.7	12.6	14.5	32.6	32.7	29.9
75-84	3.9	3.7	6.2	21.9	21.3	35.2
85 and over	0.6	0.6	0.6	6.5	6.3	11.7
Unknown age	....	....	...	†	†	0.2

* Age nearest birthday.
† Less than 0.05

In 1938-1942 the death rate for male physicians at all ages 25 and over was 2 per cent greater than that for white males of the same ages in the general population[4] (table 4). This close correspondence between the mortality of physicians and white males generally has been found in other studies. However, striking differences become evident for specific age periods. At ages 25 to 34, for example, the death rate for male physicians is only three fifths of that for all white males of the same ages. This advantage of physicians wears off rapidly with advance in age. At ages 55 to 64 physicians have the higher rate by 11 per cent and at 65 to 74 by 5 per cent. The death rates for the two groups are practically identical at ages 75 and over.

TABLE 2.—*Expectation of Life for Physicians Compared with That for White Persons in the General Population of the United States, 1938-1942; Men and Women Separately*

Present Age	Men		Women	
	Physicians	United States White	Physicians	United States White
25	43.54	43.31	47.10	46.86
30	38.86	38.83	42.43	42.29
35	34.21	34.40	37.77	37.78
40	29.73	30.08	33.26	33.33
45	25.48	25.93	28.93	28.99
50	21.47	22.03	24.69	24.81
55	17.86	18.41	20.69	20.82
60	14.72	15.11	16.91	17.07
65	11.87	12.13	13.26	13.65
70	9.38	9.51	10.04	10.60
75	7.22	7.25	7.48	8.02
80	5.55	5.44	5.37	5.96

If we may be permitted to speculate a bit, the relatively low mortality of young physicians may reflect two circumstances. In the first place most of them are drawn from the better situated social-economic classes, which generally experience lower death rates. Secondly, only those young men in a good state of health can undertake and survive the strenuous requirements of a modern medical education. As their years of practice roll on, the effect of their professional activities shows itself in increasing degree in death rates approaching those of the general population. Toward the close of their professional life the accumulated strains from previous years, as well as current demands, appear to raise their mortality to a level above that of the general population. Those physicians who have managed to survive into late life, where they experience about the same mortality as the general population, are presumably the hardier individuals who may be benefiting from a better heredity or from the advantages of a more favorable environment.

TABLE 3.—*Annual Death Rates per Thousand Male Physicians in the United States, 1938-1942 and 1925 Compared According to Age*

Age Group	Death Rate per 1,000		Per Cent Increase (+) or Decrease (−) from 1925 to 1938-1942
	1938-1942	1925*	
25 and over	20.5	21.2	− 3.3
25-34	1.7	2.7	−37.0
35-44	4.0	6.4	−37.5
45-54	10.8	11.9	− 9.2
55-64	26.9	24.2	+11.2
65-74	53.0	56.3	− 5.9
75 and over	129.1	123.2	+ 4.8

* From Emerson and Hughes[3] The death rate at ages 25 and over has been adjusted on the basis of the age distribution of male physicians in 1940

THE CAUSES OF DEATH AMONG MALE PHYSICIANS

Light on these considerations is thrown by the facts of mortality according to cause. Fortunately, the causes of death were ascertained in all but 208 cases, these forming only 1.2 per cent of the total deaths. The twenty leading causes accounted for 91.8 per cent of all the deaths; these are shown in table 5.

Far outstanding on the list are diseases of the heart and coronary arteries, with 40.7 per cent of the total deaths. Next in rank are intracranial lesions of vascular origin, accounting for 10.8 per cent of the deaths. There follow, in turn, cancer with almost 10 per cent, nephritis 6 per cent, pneumonia and influenza 5.5 per cent, accidents with almost 5 per cent, then arteriosclerosis, diabetes and suicide, each with about 2 per cent. Tuberculosis accounts for about 1.5 per cent of all deaths, and cirrhosis of the liver for a somewhat smaller proportion. The proportion for each of the remaining causes on the list is less than 1 per cent.

DEATH RATES BY CAUSE FOR PHYSICIANS AND GENERAL POPULATION COMPARED

It may be generalized that, on the whole, male physicians have higher death rates from the degenerative conditions than white males in the population but much lower death rates from most infectious diseases and surgical conditions.

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[4] To insure comparability in the two experiences, the death rates for males in the general population were adjusted on the basis of the age distribution of male physicians in 1940. The age adjusted death rates so computed show what the mortality of physicians would have been if they had experienced the age specific death rates (in five year age groups) of white males in the general population.

The greatest excess in the mortality of physicians is found from leukemia, their death rate from this cause being 175 per cent of that for white males in the general population (table 6). Some of this excess mortality among physicians undoubtedly reflects better diagnosis, but consideration has also been given lately to the possibility that in some instances the condition may have been induced by their exposure to x-rays.[5] Next in rank of excess mortality is biliary calculi and other diseases of the gallbladder, with a ratio of 145 per cent. The reason for this large excess is not apparent, but it too may arise from better diagnosis. Fortunately, the death rates from these two causes are at a relatively low level.

Then follow three degenerative conditions with high death rates; these causes are intracranial lesions of vascular origin, with a ratio of 120 per cent in the death rates of male physicians to white males of the same ages, arteriosclerosis with a ratio of 116 per cent and diseases of the heart and coronary arteries with 118 per cent.

If the recorded death rates from diseases of the coronary arteries are considered alone, the ratio of the mortality of physicians to that of white males generally reaches the high figure of 181 per cent. Two important considerations arise in this connection. First, coronary disease may be expected to be recorded more frequently as a cause of death among physicians than among the general population simply because of the better opportunities for accurate diagnosis in this profession. Then in some instances where the death certificate was not available, diseases of the coronary arteries may be reported incorrectly or without mention of the contributing causes.

However, it appears unlikely that the foregoing reservations are sufficient to account for the entire excess mortality from diseases of the coronary arteries among physicians. If coronary disease was given undue emphasis in reporting causes of death, it was quite likely done at the expense of the other diseases of the cardiovascular-renal system. In this circumstance one would expect that the death rate from the cardiovascular-renal group, excluding coronary arteries, would be lower for physicians than for white males generally. This, however, is not the case in the present experience. The detailed data of table 7 show that at ages 35 to 44 [illegible] death rates from the cardiovascular-renal diseases, [illegible] those of the coronary arteries, are at the [illegible] for physicians and white males generally; at [illegible] to 64, physicians actually have the higher death rates by a good margin. The suggestion remains, therefore, that the higher death rates from diseases of the coronary arteries among physicians than among white males generally may not arise entirely from better diagnosis and reporting but that causative factors may be present. Although there have been some opinions to the contrary,[6] the results of Smith from records of the Mayo Clinic[7] are pertinent in this connection. Six

TABLE 4.—*All Causes of Death*

Annual Death Rates for Male Physicians Compared with White Males in the General Population, United States, 1938-1942

Age Group	Death Rate per 100,000 Male Physicians	Death Rate per 100,000 United States White Males *	Ratio of Death Rates: Physicians to White Males
25 and over	2,052.6	2,022.1	1.02
25-34	172.7	283.6	0.61
35-44	298.3	400.1	0.81
45-54	1,070.0	1,096.9	0.98
55-64	2,688.0	2,416.0	1.11
65-74	5,302.1	5,049.6	1.05
75 and over	12,912.6	12,917.4	1.00

* The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940.

TABLE 5.—*Rank of the Leading Causes of Death Among Male Physicians at Ages 25 and Over; United States, 1938-1942*

Rank	Cause of Death	Deaths Number	Deaths Per Cent	Death Rate per 100,000
	All causes of death	17,165	100.0	2,052.6
1	Diseases of the heart and coronary arteries	6,994	40.7	836.3
2	Intracranial lesions of vascular origin	1,863	10.8	222.8
3	Cancer	1,659	9.7	198.4
4	Nephritis	1,016	5.9	121.5
5	Pneumonia and influenza	941	5.5	112.5
6	Accidents	793	4.6	94.8
7	Arteriosclerosis	419	2.4	50.1
8	Diabetes mellitus	372	2.2	44.5
9	Suicide	326	1.9	39.0
10	Tuberculosis	267	1.6	31.9
11	Cirrhosis of the liver	216	1.3	25.8
12	Diseases of the prostate	132	0.8	15.8
13	Pulmonary embolism and congestion	115	0.7	13.8
14	Ulcer of the stomach or duodenum	107	0.6	12.8
15	Biliary calculi and other diseases of the gallbladder	102	0.6	12.2
16	Hernia and intestinal obstruction	101	0.6	12.1
17	Leukemia and aleukemias	95	0.6	11.4
18	Appendicitis	86	0.5	10.3
19	Syphilis	76	0.4	9.1
20	Tumors, nonmalignant and unspecified	69	0.4	8.3
	All other specified causes, including senility	1,208	7.0	144.5
	Ill defined and unknown causes	208	1.2	....

TABLE 6.—*Annual Death Rates from the Principal Causes for Male Physicians Compared with White Males in the General Population,* Ages 25 and Over; United States, 1938-1942*

Cause of Death	Death Rates per 100,000 Male Physicians	Death Rates per 100,000 United States White Males	Ratio of Death Rates: Physicians to White Males
All causes of death	2,052.6	2,022.1	1.02
[illegible]	11.4	6.5	1.75
[illegible]	12.2	8.4	1.45
Intracranial lesions of vascular origin	222.8	185.9	1.20
Diseases of the heart and coronary arteries †	845.3	713.7	1.18
[illegible]	50.1	43.2	1.16
[illegible]	25.8	23.3	1.11
[illegible]	112.5	103.0	1.09
[illegible]	44.5	41.2	1.08
Suicide	39.0	37.6	1.04
Automobile accidents	44.2	49.5	0.89
Cancer	198.4	244.5	0.81
[illegible]	10.3	13.4	0.77
[illegible]	12.1	16.1	0.75
[illegible]	119.3	162.9	0.73
[illegible]	12.8	20.8	0.62
[illegible]	50.6	84.0	0.60
[illegible]	15.8	29.1	0.54
Tuberculosis	31.9	70.4	0.45
Syphilis	9.1	26.5	0.34

* The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940.

† The death rates relate to the period 1939-1942. Because of changes in the classification procedure (International List of Causes of Death) introduced in 1939, data for the general population for this cause are not comparable with those of earlier years.

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[5] [illegible], P. S., and Hawkins, J. W.: Incidence of Leukemia in [illegible] Nat. Cancer Inst. 4: 339 (Feb.) 1944. Ulrich, H.: The [illegible] eukemia in Radiologists, New England J. Med. 234: 45 (J[illegible]

[6] These are referred to by Master, A. M.: Incidence of Acute Coronary Artery Occlusion, Am. Heart J. 33: 140 (Feb.) 1947.

[7] Smith, H. L.: Incidence of Coronary Sclerosis Among Physicians, J. A. M. A. 108: 1327 (April 17) 1937.

occupational groups were studied in which all cases were subject to the same criteria for diagnosis. In each age group the proportion of cases with coronary sclerosis was found to be much higher for physicians than for the other occupations.

There are left four causes on the list with death rates for physicians above those for white males generally. For two of these, cirrhosis of the liver and diabetes, the excess may reflect, largely, better diagnosis and reporting. It is pertinent to note at this point that a study of Joslin's records shows that diabetic physicians experience lower death rates from all causes than do persons with diabetes generally;[8] this may be a result of their advantages for early diagnosis and better treatment. As for the small excess mortality from suicide among physicians, a similar finding has been observed in other experiences. Among all the causes of death for which physicians have the higher mortality, there is only one infectious in nature—pneumonia and influenza. The excess mortality here is 9 per cent, and most of it is due to the high death rates from these conditions among physicians at 65 and over.

TABLE 7.—*The Cardiovascular-Renal Diseases*

Number of Deaths and Annual Death Rates for Male Physicians Compared with White Males in the General Population: United States, 1938-1942

	Male Physicians				
Age Group	Number of Deaths	Per Cent of Deaths from All Causes in Age Group	*Death Rate* per 100,000	United States: White Males * *Death Rate* per 100,000	Ratio of Death Rates: Physicians to White Males
		Cardiovascular Renal Diseases			
25 and over	10,241	59.7	1,221.6	1,090.0	1.12
25-34	44	12.8	22.0	38.2	0.58
35-44	290	38.0	151.4	127.7	1.19
45-54	911	56.1	604.0	452.2	1.34
55-64	2,511	61.6	1,655.1	1,238.7	1.34
65-74	3,577	63.7	3,377.1	2,977.8	1.13
75 and over	2,907	61.4	7,924.2	8,394.6	0.94
Unknown age	1	...			
		Diseases of the Coronary Arteries and Angina Pectoris			
25 and over	3,453	20.1	412.9	227.5	1.81
25-34	11	3.2	5.5	6.8	0.81
35-44	128	16.8	66.8	44.1	1.51
45-54	418	25.7	277.6	159.2	1.74
55-64	1,061	26.0	699.4	359.4	1.95
65-74	1,248	22.2	1,178.2	619.5	1.90
75 and over	587	12.4	1,600.1	990.0	1.62
		Cardiovascular Renal Diseases, Excluding Diseases of the Coronary Arteries and Angina Pectoris			
25 and over	6,788	39.6	811.7	862.5	0.94
25-34	33	9.6	16.5	31.4	0.53
35-44	162	21.2	84.6	83.6	1.01
45-54	493	30.4	327.3	293.0	1.12
55-64	1,450	35.6	955.7	879.3	1.09
65-74	2,329	41.5	2,198.9	2,358.3	0.93
75 and over	2,320	49.0	6,324.1	7,404.6	0.85
Unknown age	1	....	...	..	..

* The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940

For the only other two infectious conditions among the leading causes of death, namely tuberculosis and syphilis, the death rates for physicians are very low as compared with white males generally. In the case of tuberculosis the physicians have less than half the general death rate, while for syphilis it is only one third. The more favorable mortality among physicians from these two conditions reflects largely the better situation in the social-economic class to which they belong and also the self selection by the healthier lives to study medicine. In addition, where physicians are exposed to infections they have the advantages of better knowledge of how to protect themselves and to control infections that have been acquired. The mortality from nephritis among physicians was only 73 per cent of that for white males generally. The full significance of this better showing is not apparent. The explanation may be, to some extent, in the quality of the reports of causes of death.

Aside from these three conditions—nephritis, tuberculosis and syphilis—the other diseases for which physicians experience the more favorable mortality are generally amenable to surgical intervention. These include cancer, with a ratio of 81 per cent in the death rates of male physicians to white males, appendicitis with 77 per cent, hernia and intestinal obstruction 75 per cent, ulcer of the stomach or duodenum 62 per cent and diseases of the prostate 54 per cent. The advantage of physicians from these conditions as compared with the general population is probably due to their appreciation of the significance of symptoms and their better opportunities for early diagnosis and also for prompt and expert treatment.

Another indication of the precautions exercised by physicians, as far as the obvious hazards are concerned, is found in the low incidence of fatal accidents among them as compared with white males in the general population. Their death rate from automobile accidents was 89 per cent of that for the general population, while the ratio for all other forms of accidents was only 60 per cent.

CONCLUSION

The overall picture is that physicians experience practically the same longevity and mortality as white males of the same ages in the general population. According to data for the period 1938-1942 the average length of life for the young man entering the medical profession at age 25 is forty-three and a half years; for the young woman at 25 it is over forty-seven years. The mortality among male physicians is at a rate of 2 per cent per annum.

The physician, utilizing his special knowledge and skills, profits from the early recognition of the immediate conditions and hazards which affect his health. Evidence in this direction is found in the favorable mortality from most infectious diseases and surgical conditions and from accidents. The death rate from tuberculosis among male physicians is less than half that of white males of the same ages in the general population; for syphilis the ratio is only one third. The death rate from cancer among male physicians is four fifths of that for white males of the same ages; in the case of appendicitis, hernia and intestinal obstruction the ratio is three fourths. Fatalities from automobile accidents among male physicians occur at a rate nine tenths of that for white males generally; for all other types of accidents the ratio is only three fifths.

These advantages are offset by a relatively high mortality from the cardiovascular conditions. In particular, the recorded death rate from diseases of the coronary arteries among male physicians is one and four-fifths times that of white males of the same ages in the general population. This excess cannot be accounted for entirely by better diagnosis and by the quality of the reporting of causes of death; it is suggested that causative factors may be present in the higher mortality from diseases of the coronary arteries among physicians The causes are not immediately apparent, and there is therefore much room for surmise. There come to mind the special activities and burdens of the profession: their call to service at any time, their constant guard against varied infections and their need for mental alertness all may well impose strains that are felt in few other callings.

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[8] Diabetes in the 1940's, George F. Baker Clinic, Boston and Metropolitan Life Insurance Company, New York, September 1940.

The mortality from leukemia among male physicians is one and three-fourths times that of white males generally. Although better diagnosis may account for some of this excess, opinion has been expressed recently that in some instances physicians may have acquired the disease as a result of their exposure to x-rays.

There is room for much intensive study for underlying factors in the case of those conditions for which physicians experience a higher mortality than the general population.

ABSTRACT OF DISCUSSION

Dr. Haven Emerson, New York: While my studies of 1926, though less complete than Dr. Dublin's of today, showed essentially the same characteristic, may I be permitted to doubt the assumption offered this morning to the effect that "knowledge of the causes of death of physicians may well point the way to effective preventive measures." Not unless we have some rational inkling of the predisposing and precipitating etiology and find them to be preventable. The main cause, I believe, of this high rate among certain causes of death is that we are entirely, as a profession, whether a public health profession or a medical profession, wholly ignorant of the determining and predisposing factors that lead to these deaths from the cardiovascular-renal complex. We really know nothing useful as to the causative or preventive factors that lead to cardiovascular deaths in physicians or others in the decades above 60 years. Work, anxiety, sustained mental alertness, irregularity of rest, food and exercise are common to many others than physicians. Leukemia as a preponderant cause should prove possible of occupational explanation. What seems to me well maintained in the present and other studies of deaths of physicians is that where a cause is known, and known to be preventable, physicians take the benefit of this knowledge and put it to personal use earlier than they can make it effective among their patients, or at least than it can be demonstrated in the general population. Other things being equal, the higher the cardiovascular death rate in the community, age, sex, race and occupation being considered, the better has been the public health service in that community. I see no reason to believe that the high rates for these conditions among physicians means anything more than that physicians have, on the whole, been spared more commonly to live into the decades when nature takes their fate in hand and cuts the thread of life. There is little evidence that physicians as a class observe the precaution of periodic health examination, endorsed by the A. M. A. as long ago as 1922, nor is there any evidence of superiority of general hygienic practices by physicians, especially in matters of diet and habitual use of alcohol, and tobacco particularly. I should say that we have not proved any point of superiority of physicians in the manner of their living, although there is probably for the medical student a more thoughtful regard for his health through the use of repeated chest x-ray examinations particularly than for other persons likely to be separately recorded. I think we must learn more of functional pathology and the problems of metabolism, the natural history of aging, rather than to rely on comparison between physicians and the general public as evidence or explanation of differential death rates of physicians.

Dr. Louis I. Dublin, New York: I would go along with Dr. Emerson if what I showed with regard to the excess mortality from coronary disease were limited to the age period 65 and over. There would then be merit to his point, and we wouldn't have made the statement he quoted. However, these excesses in mortality from coronary disease amount to 44 per cent at ages 25 to 44 and to 88 per cent at ages 45 to 64. Such excesses in mortality at relatively early ages do not indicate that we are concerned with the inevitable and that, since death is our lot, coronary disease and heart conditions must loom large in the picture. We know that advantage can be taken of existing knowledge in the fields of medicine and public health; for the preventable diseases have already been very much brought under control. Dr. Emerson would suggest that we really know next to nothing with regard to the preventability of the cardiovascular conditions. That doesn't seem to fit at all into what we, as public health people, are insisting in all our public statements. What is the basis of the entire campaign in the heart field and in the field of personal hygiene? Does the physician help himself? Does he follow what he knows and what he tells his patients? Dr. Emerson himself later indicated that there was a good deal of merit in the criticism that the doctor himself doesn't follow his own mandate with regard to diet, with regard to rest and with regard to exercise. The point that he made with regard to the high mortality from cardiovascular disease in those communities which have the lowest death rates and the highest sanitary standards has no bearing here. I know perfectly well that lives are saved from typhoid, tuberculosis and diphtheria, so that an increasing proportion of deaths will occur at the higher ages. By the end of the century 90 per cent of all deaths will be beyond age 45. But that is not what we are talking about; we are concerned with comparisons of mortality made age for age. I showed you the real advantages which the doctor has in mortality from most infectious diseases and from surgical conditions. But against these advantages are the evidences of some faults in personal hygiene and of a very difficult way of life. This helps explain what we have shown. One would have every right to believe that for a group of physicians beginning their career about age 25 there would be an advantage of a number of years in expectation of life as compared with the general population at the same stage of life. But the advantage doesn't exist; it has been washed away. Whatever they have saved from some infectious and surgical conditions they have lost by not making the most out of the advantages that come from a good personal hygiene and normal tempo of living.

MEAT IN THE DIET OF YOUNG INFANTS

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The use of meat in the diet of infants before the age of 6 to 9 months has not been a general practice, because of the prejudice that meat is hard to digest and because it has not been available in a suitably homogeneous form. With scientific evidence to refute the prejudice and with commercially strained meat now available for use, meat presents itself to the pediatrician and parent as a concentrated source of high quality protein for supplemental feeding at an age when the protein requirement, expressed on the basis of body weight, is at its highest.

Reported here are the results of adding strained meats to the formulas of bottle-fed babies beginning at the age of 6 weeks and continuing for a period of eight weeks. The purpose was twofold: first, to determine the acceptability of and tolerance for meat in infants at an early age; and second, to determine the effect on the hemoglobin and red cell values in infants receiving meat as compared with those receiving no meat. The work was done in two institutions in which normal well babies were kept pending their adoption or their return to parental homes.[1] During a six month

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From the Department of Home Economics and the Department of Pediatrics, University of Nebraska.

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[1] The staff members of the two institutions cooperated in this study.

d 33 infants were studied; 18 received the strained t supplement and 15 served as controls.

The strained meat was mixed with the formula just before it was distributed into the bottles for individual feedings. The amount of meat added was determined by calculating the quantity necessary to increase the protein content of each infant's formula 25 per cent, and therefore it varied with the strength of the formula and the variety of meat used. The varieties were veal, beef, pork and lamb; one was used each week, and then the sequence was repeated. The amount of strained meat averaged about 27 Gm. daily. The total amount was not added abruptly—one third of the total was added for three days, this was increased to two thirds for the second three days, and then the full amount was added beginning the seventh day. The "dextri-maltose" in the formula was decreased sufficiently to compensate for the calories furnished by the meat.

One institution used fresh milk and "dextri-maltose" for the formulas and gave each infant a 25 mg. ascorbic acid tablet daily. The other institution used evaporated milk and "dextri-maltose" and used tomato or citrus fruit juice as a source of ascorbic acid. Both institutions used a concentrated source of vitamin D. All the babies were given five feedings at four hour intervals omitting the 2 a. m. feeding.

Comparison of Blood Values of Meat Group and Control Group of Infants

	No	Age of Infants 6 Wk	12 Wk	14 Wk
Actual				
Hemoglobin, Gm /100 cc				
Meat group . ..	18	10.5	11.5	11.9
Control group	15	10.7	10.3	9.6
Red cells, m /c mm				
Meat group	18	3.60	4.13	4.40
Control group	15	3.67	3.87	3.90
Percentage of initial value				
Hemoglobin, Gm /100 cc.				
Meat group . ..	18	100	109.5	113.3
Control group ...	15	100	96.3	89.7
Red cells, m /c mm				
Meat group	18	100	114.7	122.2
Control group	15	100	105.4	106.2

Records were kept of the number, color and consistency of the stools, of daily temperature, food intake and regurgitation, and of comments from the members of the nursing staff in regard to the infants. The infants were weighed three times a week and measured at the beginning and end of the study.

At the beginning of the study, when each infant was 6 weeks old, the hemoglobin and red cell content of the blood was determined. Hemoglobin was converted to acid hematin and read in a Cenco-Sheard-Sanford photelometer. The blood tests were repeated at the end of six and eight weeks, or when the infants were 12 and 14 weeks of age.

RESULTS

The infants readily accepted the formula with the strained meat added and demonstrated no distress from it. During the first week on the strained meat supplement 10 of the 18 infants averaged one more stool a day than during the week previous to the addition of meat or during the second week of their meat regimen. As was to be expected, over the short period of eight weeks there was no difference in the gain in weight or length of the infants receiving the strained meat as compared with the controls. The nurses considered that in general the babies who received strained meat routinely were more satisfied and slept better at night than did the control babies. The pediatrician (G. C.) in charge of the medical care for all the children considered that the babies were in a better physical condition as a result of receiving the meat supplement.

The results of the blood tests are shown in the accompanying table. The values determined six and eight weeks after the initial test are expressed in percentage of the initial value. In this way each infant is compared with himself, and his progress is indicated by values above or below 100 per cent.

It may be seen that the average hemoglobin and red blood cell values of the 18 infants who received meat for eight weeks were 113.3 per cent and 122.2 per cent, respectively, of the average values at the beginning of the study. Similar comparison of values for the control group shows that the hemoglobin and red cell content was 89.7 per cent and 106.2 per cent of the initial values. There was less variability as judged by the range of individual values in the meat group than in the control group.

On the basis of these figures it appears that the addition of strained meat to the formula not only checks the drop in hemoglobin characteristic of this age but actually promotes the formation of hemoglobin and red blood cells. It is not within the scope of this preliminary study to speculate on which factor or factors in the meat were responsible for the improvement. From the practical point of view, meat is a food, and this food made the difference in the supplemented group as compared with the control group.

SUMMARY AND CONCLUSIONS

1. No adverse symptoms occurred when the protein intake of 18 bottle-fed infants was increased by 25 per cent by the addition of approximately 1 ounce (27 Gm.) of strained meat to the formula when the infants were 6 weeks of age.

2. The observations of the pediatrician and the members of the nursing staff suggest that the general well-being of the infants who received the meat supplement was better than of the controls.

3. This preliminary study indicates that strained meat added to the formula of bottle-fed infants not only checks the drop in the hemoglobin level, which is characteristic of this age, but actually promotes the formation of hemoglobin and red blood cells.

Coronary Subsidiary Channels.—In later years it has become well known that there is a rich network of anastomoses which runs throughout the muscle and connects terminals not only from neighboring small branches but even from the right and the left coronary. It now appears that, instead of increasing the number in later years, nature laid them down to begin with —many tiny communicating filaments with little to do but be ready when called on. If there is any interference with arterial flow in one locality, an inflow of blood is sent from less obstructed territory through these subsidiary channels, which enlarge with use. . . . Coronary disease of extent sufficient to produce angina is a serious matter. Sudden death may occur. Complete occlusion with or without myocardial infarction may ensue. Congestive failure may follow. In many instances the development of collaterals, the avoidance of precipitating factors and the relief of accompanying disturbances may result in temporary or permanent cessation of attacks, the disease then becoming latent. In many cases proper attention to abdominal symptoms yields valuable results. And equally if not more important, the patient should have the confident assurance from his doctor that nature, continually at work to develop an adequate collateral circulation, may count him among her successes. —Luten, Drew W.: The Clinical Course of Coronary Disease, *Postgraduate Medicine*, May 1947.

HISTOPLASMOSIS

A Review of the Cutaneous and Adjacent Mucous Membrane Manifestations with a Report of Three Cases

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Histoplasmosis has been considered, until recently, an extremely rare disease of tropical origin, but in the current literature there has been a geometric increase of case reports. Most cases of histoplasmosis have been systemic and generalized, but involvement of the skin and nearby mucous membrane is common, and there is evidence that the disease may be local as well as generalized.

Darling[1] described the first 3 cases of histoplasmosis in Panama; hence the tropical connotation long attached to the disease. He did not suspect that the etiologic agent was a fungus but believed the organism to be protozoan in nature. Da Rocha-Lima,[2] who studied Darling's microscopic sections in 1913, was the first to suggest a yeastlike fungus as the cause of the disease; but confirmation of the correct etiology was not forthcoming until 1934, when De Monbreun[3] cultured the fungus from the blood and spleen of an infant 5 months of age and suggested its identity with the organism observed in the original cases.

From the time when Darling described the disease until 1937, only 13 valid cases were recognized, and 6 of these were identified in retrospect. Almost 70 cases have been described in the past eight years, and many of these have had primary or secondary extensions pertaining to the skin. The realization that diagnosis often depends on a prolonged and painstaking microscopic search for the organism by a trained pathologist has led to more frequent recognition of the disease.

MYCOLOGY

Histoplasma capsulatum is different from other pathogenic fungi in that it primarily invades the reticuloendothelial system; hence, the synonym for histoplasmosis is reticuloendothelial cytomycosis. The organism occurs in tissue intracellularly in the macrophages as a small round encapsulated yeastlike body, with the capsule easily discernible. According to Parsons and Zarafonetis[4] it varies in size from 1 to 5 microns with an average diameter of 3 microns, although larger forms up to 10 microns have been recognized. The microscopic differentiation of H. capsulatum from the organisms of leishmaniasis and toxoplasmosis is important. The tissue pathology is that of a granuloma with pseudotubercle formation, necrotic foci bordered by macrophages containing the organism and areas of ulceration (fig. 1).

Direct identification of the organism can sometimes be made from smears of the peripheral blood,[4] of material from sternal aspiration and of material from fresh biopsy specimens (fig. 2). As reported in our first case, the fungus was found in a specimen of sputum. Occasionally, budding forms are seen in fresh preparations. Hematoxylin and eosin, Giemsa and Wright's stains are among those more satisfactory for use in both biopsy material and direct smears.

At room temperature, H. capsulatum grows on Sabouraud's medium as a white, fluffy, aerial mycelium which is grossly indistinguishable from Blastomyces dermatitidis (fig. 3). It has been an observation of ours that it cracks the medium somewhat as does Paracoccidioides cerebriformis (fig. 4). In culture mounts from young colonies both H. capsulatum and B. dermatitidis show septate and branched hyphae bearing small pyriform or round spores 2.5 to 3 microns in diameter (fig. 5). As the cultures of H. capsulatum grow older, however, a microscopic mount will reveal characteristic tuberculate chlamydospores. These are large spores 7.5 to 15 microns in diameter with easily discernible spiny processes projecting from the entire surface. Their presence establishes the diagnosis (fig. 6). At 37 C. on blood agar the organism grows as a yeast in moist white colonies, which reveal on culture mounts a tiny budding yeast body varying in size from 1 to 5 microns and similar to the forms found in tissue. Biopsy specimens, peripheral blood, material from sternal aspiration and abscess fluid should all be cultured.

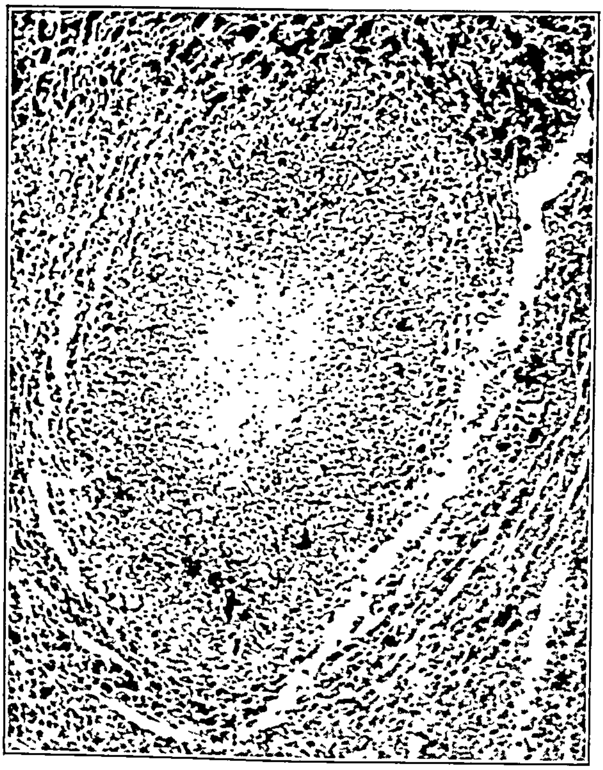

Fig. 1.—Low power photomicrograph of a section of adrenal gland with a typical lesion of histoplasmosis. Pseudotubercle formation within the granulomatous mass is apparent.

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Because of lack of space, this article has been abbreviated in THE JOURNAL by omission of tables 1 and 2, figures 3, 4, 5, 6 and 12 and portions of the text. The complete article will appear in the author's reprints.

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3. De Monbreun, W. A.: The Cultivation and Cultural Characteristics of Darling's Histoplasmosis Capsulatum, Am. J. Trop. Med. **14**: 93 (March) 1934.
4. Parsons, R. J., and Zarafonetis, C. J. D.: Histoplasmosis in Man: Report of Seven Cases and a Review of Seventy-One Cases, Arch. Int. Med. **75**: 1 (Jan.) 1945.

A third method of diagnosis which has attained an equivocal degree of success is the skin test, developed independently by Van Pernis, Benson and Hollinger[5] and by Zarafonetis and Lindberg.[6] The antigen, known as histoplasmin, consists of a sterile filtrate prepared from broth cultures of the organism and is injected intracutaneously, the test being read after forty-eight hours. Positive reactions present both edema and erythema, the former having a diameter of at least 5 mm.

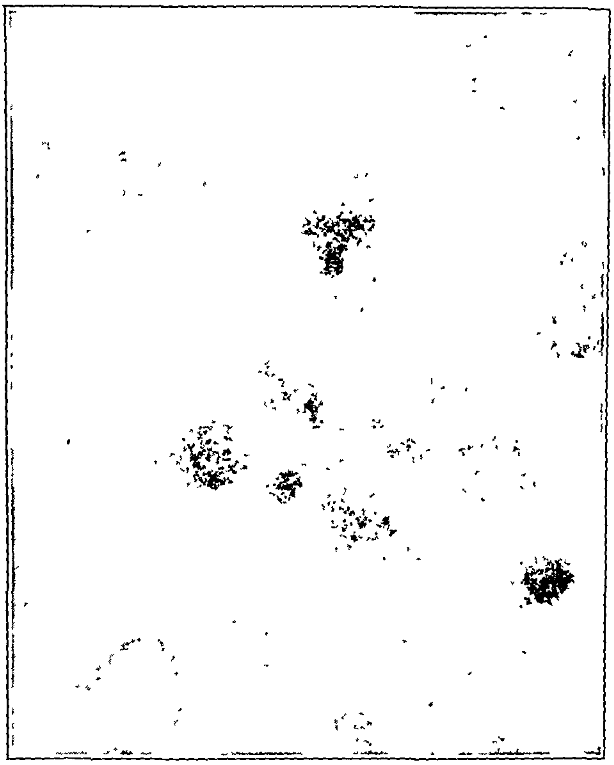

Fig. 2 (case *2*).—Photomicrograph made from microscopic section of the lesion of the tongue. An abundance of H. capsulatum organisms is visible within the macrophages (oil immersion).

Specificity of the test has been studied by several investigators. Emmons[7] found that of 39 guinea pigs infected with experimental histoplasmosis, 32 reacted to histoplasmin, while all of 8 experimentally infected with blastomycosis reacted to histoplasmin. After delving further into the problem as it concerned human subjects, Emmons expressed the belief that a positive reaction to histoplasmin might be due to sensitization either to H. capsulatum, B. dermatitidis or even to other as yet undetermined antigenic agents. Palmer,[8] after an extensive study of nontuberculous pulmonary calcification in student nurses, was of the opinion that positive reactions to histoplasmin should be regarded as evidence of previous infection with H. capsulatum or an immunologically related organism. He summarized the results of his investigation with the rather startling conclusion that a high percentage of pulmonary calcifications in persons presenting negative reactions to tuberculin were in his opinion associated with infections due to H. capsulatum. It was suggested by Christie and Peterson[9] that since the causative organism of histoplasmosis appears to flourish only in the yeast form in infected animals and human beings, an *antigen extract of this phase might logically be expected* to give more satisfactory results than the broth filtrate, with its extraneous antigens. Preparation of such a product would apparently require the use of a blood agar medium, with frequent transfers to fresh mediums.

The concept of subclinical varieties of histoplasmosis, in contrast to the severe, usually fatal form of the disease hitherto diagnosed, has been postulated by numerous investigators as an explanation for the high percentage of persons demonstrating a positive skin test with no detectable evidence of the disease in an active form.

In essence a positive cutaneous response to histoplasmin is frequently, for reasons cited previously, of little or no clinical significance, while a negative reaction may be helpful so far as it eliminates histoplasmosis as a diagnostic possibility.[9]

Various laboratory animals have been found susceptible to H. capsulatum, including mice,[5] rabbits,[6] rats[10] and guinea pigs.[11] This susceptibility can be a definite aid in the identification of the organism and diagnosis of the disease. De Monbreun[12] has reported the only case of the natural invasion of H. capsulatum in an animal, having isolated the organism from a dog.

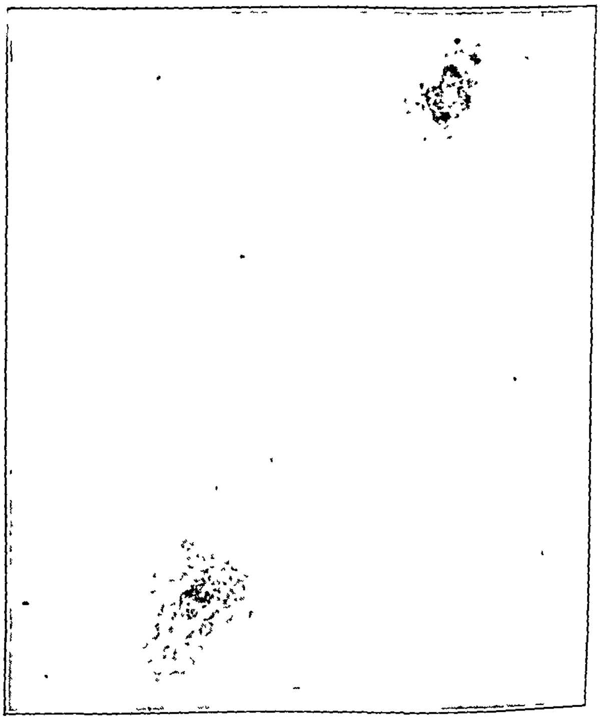

Fig. 7 (case *1*).—Two rather deep seated, discharging, granulomatous lesions, which occurred over the calf.

H. capsulatum distributes itself widely throughout the reticuloendothelial system, and a complete review

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5. Van Pernis, P. A.; Benson, M. E., and Hollinger, P. H.: Specific Cutaneous Reactions with Histoplasmosis. Preliminary Report of Another Case, J. A. M. A. **117:** 436 (Aug. 9) 1941.

6. Zarafonetis, C. J. D., and Lindberg, R. B.: Histoplasmosis of Darling: Observations on Antigenic Properties of the Causative Agent; Preliminary Report, Univ. Hosp. Bull., Ann Arbor **7:** 47 (June) 1941.

7. Emmons, C. W., and Olson, B. J.: Studies of the Role of Fungi in Pulmonary Disease: Cross *Reaction of Histoplasmin, Pub. Health Rep.* **60:** 1383 (Nov. 23) 1945.

8. Palmer, C. E.: Nontuberculous Pulmonary Calcification and Sensitivity to Histoplasmin, Pub. Health Rep. **60:** 513 (May 11) 1945.

9. Christie, A., and Peterson, J. C.: Pulmonary Calcification in Negative Reactors to Tuberculin, Am. J. Pub. Health **35:** 1131 (Nov.) 1945.

10. Hansmann, G. H., and Schenken, J. R.: A Unique Infection in Man Caused by a New Yeast-Like Organism, a Pathogenic Member of the Genus Sepedonium, Am. J. Path. **10:** 731 Nov.) 1934.

11. Negroni, P.: Estudio micológico del primer caso sud-americano de histoplasmosis, Rev. d. Inst. bact. **9:** 239 (June) 1940.

12. De Monbreun, W. A.: The Dog as a Natural Host of *Histoplasma* Capsulatum: Case of Histoplasmosis in This Animal, Am. J. Trop. Med. **19:** 565 (Nov.) 1939.

of the reported cases [4] reveals the involvement of almost every organ. Darling [1] considered that the primary symptoms were fever, splenomegaly, loss of weight, anemia and leukopenia and that the disease was chronic in nature. The more commonly involved sites include the skin and adjacent mucous membranes, the larynx, lungs, liver, spleen and gastrointestinal tract, as well as the bone marrow and lymph nodes.

Three cases are reported here, each of definite diagnostic interest to the dermatologist, followed by a review of previously reported cases involving the skin or adjacent mucous membranes. Case 1 is also being reported elsewhere but is included because of the interesting cutaneous lesions and the problem in differential diagnosis. Material from the patients in cases 2 and 3 has been used in various in vitro tests of proposed therapeutic agents.[13]

REPORT OF CASES

Case 1.—F. F., a white woman aged 30, a native of Michigan, had been well until June 1943, when there suddenly developed a swelling in the right lower quadrant of her abdomen, which was soft, tender and associated with an erythema and an increase in the temperature of the overlying skin. No constitutional reaction was present, and the appendix and right ovarian tube of the patient were removed. Ten days later there developed pain in the left side and a bilateral thrombophlebitis, which was treated with a sulfonamide drug and healed in six weeks. She remained well until November 1943, at which time a swelling developed in the right cervical region which was painful and hot with reddish purple discoloration of the skin. It gradually enlarged to the size of a hen's egg and was associated with daily afternoon elevations of temperature to 102 F. and occasional sweats at night. The nodule was incised in December 1943. It exuded a watery yellow fluid, and drainage continued until August 1944, when closure finally occurred. From October 1943 until February 1944 the patient suffered from an irritating nonproductive cough. In January 1944 the spleen and liver were observed to be enlarged, and a nodule developed on the right wrist. This was incised in May 1944, discharging a yellow sanguineous fluid, and at the same time the patient received 1 million units of penicillin, after which the second lesion healed. However, two weeks later nodules developed on the forehead, the left leg, the left thigh and two on the right leg. These lesions ulcerated and drained, and while those on the left leg healed in several months, the others persisted. Splenomegaly, hepatomegaly and elevations in temperature continued to be present. There was nothing contributory in the family, social or past histories.

She was admitted to the University Hospital on Sept. 9, 1944, at which time physical examination revealed a chronically ill, pale and emaciated white woman. The temperature was 100 F., the pulse rate 100, the respiratory rate 20, the blood pressure 95 systolic and 60 diastolic and the weight 99 pounds (45 Kg.). The skin was dry and showed evidence of recent loss in weight. Two draining granulomatous lesions were present on the right calf. These were fairly deep seated, soft, brownish purple and each about 2 cm. in diameter (figs 3 and 4). A fluctuant brownish purple nodule 1.5 cm. in diameter was present on the midforehead. Firm, nontender, hypertrophic brown scars, which varied from 1.5 to 4 cm. in diameter, were noted on the left calf, the left thigh, the volar surface of the right wrist and below the mandible on the right side of the neck. Significant involvement of the lymph glands was not present. The nasal mucosa was hyperemic, but the buccal mucosa was normal. The right side of the chest was dull anteriorly and over the axillary third and fourth intercostal spaces. Bronchovesicular breathing and coarse rales were present in these areas. Rales were also present at both pulmonary bases, and bronchial breathing was heard over the right base. The spleen was palpable 2.5 cm. below the left costal margin, moved freely with respiration and was nontender. The liver was palpable 3 cm. below the costal margin at the right nipple line and 6 cm. below the xyphoid cartilage and was slightly tender. There was decided tenderness over the right hip joint with sciatic radiation. The deep tendon reflexes were not elicited in the lower extremities.

On the patient's first admission she remained hospitalized until November 1944. The diagnosis of histoplasmosis was made from the sputum examination, and while awaiting the arrival of an antimony compound for treatment the patient was placed on penicillin therapy, receiving 480,000 units daily. The course was progressively bad, and respirations ceased five days later. On the last day of life the liver and spleen were no longer palpable.

Urinalyses were persistently negative. Roentgenograms of the chest showed right hilar adenopathy and patchy pneumonitis of the right lung and atelectasis. Roentgenograms showed little change until February 1945, when widely disseminated parenchymal disease of both lungs was apparent, with patchy increase in density from apexes to bases bilaterally.

The total serum protein was 6.7 Gm. per hundred cubic centimeters on admission, with an albumin-globulin ratio of 2.2. The sulfobromophthalein sodium test for liver function showed 40 per cent retention of the dye by the liver in thirty minutes. The prothrombin time was 115 seconds as compared with a control time of 40 seconds. The congo red test for amyloid showed no retention of the dye in the tissues after one hour.

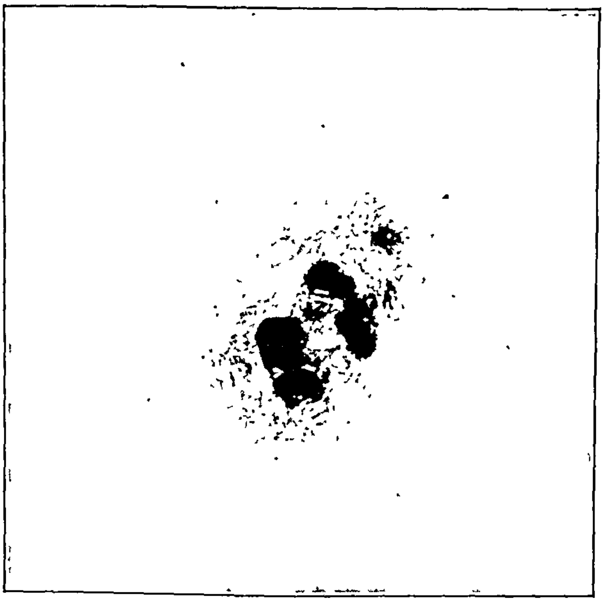

Fig. 8.—Close up view showing the upper of the two lesions in figure 7. This lesion was approximately 2 cm. in diameter.

The intradermal tuberculin test using a 1:10,000 dilution of old tuberculin was positive at twenty-four, forty-eight and seventy-two hours, showing an area of erythema and induration of 1 by 1.5 cm. The intradermal test for histoplasmosis was also positive, showing an area of erythema and induration measuring 2 by 2.5 cm. at twenty-four hours, 2 by 3 cm. at forty-eight hours and 3 by 5 cm. at seventy-two hours.

Repeated direct examinations of material from the cutaneous lesions, sputum and stool were negative for mycotic or tuberculous organisms until February 1945, when H. capsulatum was found in the sputum.

Antemortem biopsies from the cutaneous lesions on the leg, thigh and forehead revealed in each instance a chronic infectious granuloma with epithelioid cells about caseous centers, a round cell infiltrate and a few giant cells. In no instance were the organisms of H. capsulatum found, and repeated special stains for Mycobacterium tuberculosis were negative.

The pertinent autopsy observations were as follows: Grossly there were bilateral confluent necrotizing pneumonia, extensive granulomatous peritonitis with tubercle-like lesions and abscesses, extensive liquefying lesions in the liver and abdominal lymph nodes and miliary lesions in the brain, spleen, liver, thyroid, capsule of the pituitary body, adrenals, kidneys and urinary bladder. In addition there were a chronic adhesive pleuritis and an old fibrocalcareous tuberculosis of the right upper pulmonary lobe. Microscopically H. capsulatum was present in enormous numbers in granulomatous foci and in Langhans' giant cells in the lungs and spleen. The organisms were also identified in the brain, the walls of the large intestine, the abdominal lymph nodes, the bone marrow and the fallopian tubes The typical lesion was one of central caseation surrounded by an epithelioid zone and Langhans' giant cells. Tubercles and Myco tuberculosis were demonstrated in the liver.

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[13] Seabury, J. H.: To be published.

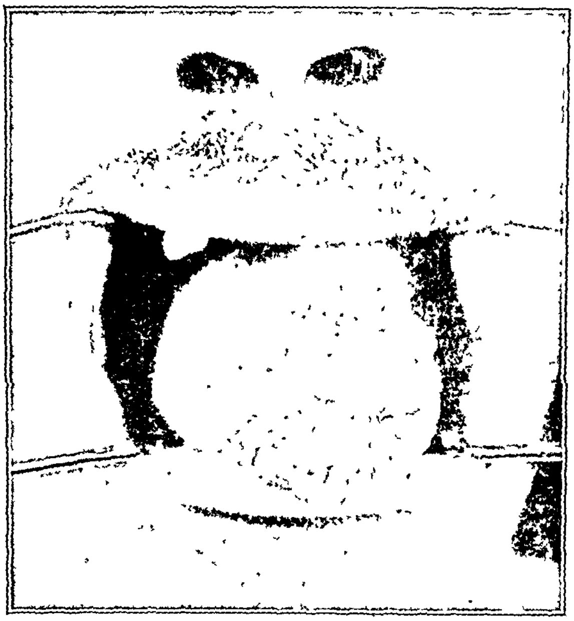

Fig 9 (case 2)—Involvement of the left side of the tongue by a large, firm, fungating lesion. The papular eruption over the chin had already cleared at the time this photograph was made

Case 2—I. T. W., a Negro man aged 42, gave a history of red, painful and tender nodules occurring about the scalp and neck in 1930. These lesions, which ulcerated and discharged a foul blood-tinged material, persisted over a period of several months, during which time the patient felt ill After this he was well until January 1944 when painful, swollen glands appeared in the left side of the neck just beneath the ear and progressively spread down the posterior cervical chain. This was accompanied by malaise, night sweats and some loss of weight. The glands were incised in March 1944, exuding a sanguineous material, and the discharge persisted intermittently until July 1944. In May 1944 his tongue became red, tender and swollen to twice its normal size, and the patient noted a definite nodule on the left side of the tongue. Over the surface of the tongue were many small white spots which on healing left a small linear trench A sanguinopurulent discharge from the mouth was present, and the lingual lesion persisted until his admission to the University Hospital on Oct. 19, 1944. Two months prior to admission a pustular eruption had developed on the chin and a crusted lesion in the right nares. The patient had lost 20 pounds (9 Kg.).

On physical examination the patient did not appear acutely ill. The temperature was 98.6 F., the pulse rate 72, the respiratory rate 16 and the blood pressure 120 systolic and 80 diastolic. There was a crusted, fissured lesion involving the lateral mucous membrane of the right nares. Large firm papules 4 to 7 mm. in diameter, some with pustular or vesicular elements, were present over the chin. There was an incisional scar in the left lower cervical region, and the anterior cervical and submental lymph nodes on the left were enlarged and firm but not tender. On the left side of the tongue was a large fungating lesion, which measured 2.5 by 5 cm. (figs. 5 and 6). This lesion was firm, extremely tender and grooved from the impression of the teeth. It bled easily. The tongue was freely movable, and no other lesions were present on the buccal or pharyngeal mucosa. Indirect laryngoscopic examination revealed a nodule, believed to be cystic in nature, on the epiglottis. The patient was not hoarse, the liver and spleen were not palpable and the remainder of the examination revealed normal conditions.

Microscopic sections of the lesion on the tongue showed decided hyperplasia of the prickle cells with a heavy inflammatory infiltrate consisting mainly of plasma cells with some lymphocytes and eosinophils widely distributed throughout the lingual tissue. Repeated biopsies revealed a similar picture, and in the fourth specimen, taken Dec. 1, 1944, the yeastlike organisms of H. capsulatum were identified intracellularly. Monthly biopsies thereafter in every instance revealed the organism, although by Feb. 28, 1945, at which time the last specimen was obtained, the tongue was essentially normal.

After the diagnosis had finally been made, on Dec. 22, 1944, the patient was given sulfadiazine orally and received 6 Gm. a day until March 27, 1945, a total dose of 576 Gm. No reaction to the drug was perceived. The course of the disease was one of steady clinical remission. The cutaneous lesions cleared in several weeks after sulfadiazine therapy was instituted, and by the early part of January 1945 definite improvement was noted in the tongue By February 1945 the tongue was normal in appearance, and the patient felt no pain or other symptoms. Nevertheless, treatment was continued until the end of March 1945, at which time he was discharged but advised to continue taking sulfadiazine and to return in four weeks Thus far he has not returned to the clinic.

Case 3.—C. W., a Negro man aged 23, had been well until February 1942, when a penile sore developed. The only symptoms were a loss of 10 pounds (4.5 Kg.) in weight and occasional discomfort at the site of the lesion. The patient was admitted to the Michigan Rapid Treatment Center[14] on March 6, 1945.

There was a fairly extensive ulceration of the prepuce with two round shallow ulcers, one at the anterior and one at the posterior border (fig. 7). Considerable erythema and erosion were present on the glans penis There was little tenderness and only a slight degree of induration. The inguinal lymph nodes were slightly enlarged bilaterally, discrete, not tender and of a rubbery consistency.

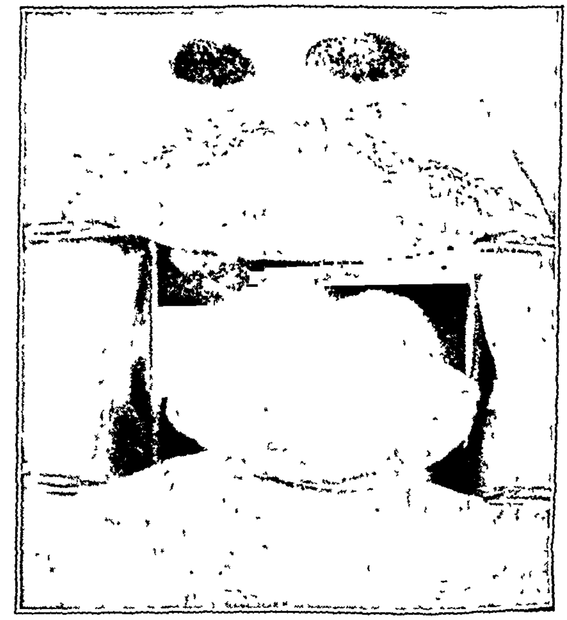

Fig. 10 (case 2).—Appearance of the tongue following the ingestion of 576 Gm of sulfadiazine over a period of approximately three months.

An intracutaneous test using a broth filtrate of a culture of H. capsulatum was negative after twenty-four, forty-eight and seventy-two hours. The test was later repeated with a different histoplasmin and was positive.

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[14] Ryan, N. W., Medical Officer in Charge, Michigan Rapid Treatment Center, through whose courtesy this case report is included in this paper.

Biopsy material from the penile lesion revealed hyperplasia and ulceration of the epidermis. In the cutis at the base of the ulcer the sections showed a chronic infectious granuloma with an infiltration of lymphocytes and a few polymorphonuclear neutrophils, occasional giant cells and areas of caseation necrosis. With Giemsa stain the yeastlike form of H. capsulatum was identified in the reticuloendothelial cells. Similar microscopic observations were made in biopsy specimens from the inguinal lymph nodes, and H. capsulatum was again identified.

Cultures of material from the penile lesions on Sabouraud's medium at room temperature produced the characteristic white fluffy growth, and many tuberculate chlamydospores were found on culture mounts Blood agar cultures at 37. C. produced the budding form of the organism.

During the period of hospitalization, which extended over a span of approximately four months, a sharply circumscribed, brownish, pruritic papule, about the size of a half dollar, with a superimposed bulla, developed over the left palm (fig. 12). Cultures from and biopsy of this lesion did not reveal H. capsulatum, and within a few weeks it had cleared completely.

Treatment consisted initially of the intramuscular administration of 5.1 million units of penicillin in divided doses over a period of nineteen days. Subsequently the patient was given 522 Gm. of sulfadiazine during an interval of eighty-seven days. Several subsequent biopsies of the penile lesion were productive of only one alteration in the basic observations—the pathologist expressed the opinion that there appeared to be fewer organisms than in specimens obtained before treatment. At the last examination in April 1947, the penis was found to be enlarged because of a chronic lymphostasis In the areas of previous ulceration depigmentation was present, but there was no apparent clinical activity. A biopsy specimen did not contain demonstrable organisms of H. capsulatum.

The patient was released from the hospital to continue, under supervision of his local physician, the ingestion of 4.0 Gm. of sulfadiazine each day. At the last examination in April 1946 the disease process remained limited to the penis. The ulcers had healed The penis was enlarged because of a chronic lymphostasis. In the areas of previous ulceration depigmentation was present.

REVIEW OF THE CUTANEOUS LESIONS OF HISTOPLASMOSIS

In addition to the 3 cases reported in this paper 21 other cases presenting cutaneous lesions which were presumably associated with an infection of histoplasmosis have been reported (table 1). Histoplasma capsulatum was actually identified in the skin by microscopic section or by culture in 12 instances. Of the remaining 12 cases, 3 involved only purpura (cases 19, 20 and 21 in table 1); in 2 the description of the lesions was entirely inadequate (cases 1 and 4 in table 1); and 3 instances were most probably the cutaneous lesions of the complicating diseases (cases 10, 14 and 18 in table 1). One case (case 11 in table 1) presented a toxic erythema as the only cutaneous manifestation. The remaining 3 cases (cases 5, 22 and 23 in table 1) were probable or at least possible examples of cutaneous histoplasmosis, although the causative fungus was either not found or not searched for in tissue from the lesions of the skin. Of the 12 actual and 3 possible cases of cutaneous histoplasmosis, 13 had granulomatous or ulcerative type of lesions, 3 presented nodular lesions, 3 had papulonecrotic type of lesions, and 2 had abscesses. In 10 cases the cutaneous lesions were distributed over the face and neck, and in 6 of these they were directly adjacent to the orifices. Lesions were present on the trunk in 4 cases, on the extremities in 4 cases, on the male genitalia in 2 cases and were generalized in 1 case.

Considered in the differential diagnosis of the disease in the preceding 15 cases were gumma, primary syphilis, basal cell epithelioma, tuberculosis cutis, blastomycosis, chromoblastomycosis, granuloma inguinale and leishmaniasis.

REVIEW OF THE LESIONS OF THE MUCOUS MEMBRANE

In addition to case 2 of this paper we have found mentioned or described in the literature 23 cases of histoplasmosis in which involvement of those mucosal surfaces directly adjacent to the skin has occurred. In 7 of these 23 cases these lesions coexisted with cutaneous involvement and have been described previously in conjunction with the lesions of the skin (cases 4, 7, 15, 16, 18 and 20 in table 1).

A summary of the 24 cases with lesions of the mucous membrane reveals that the organism was actually recovered from the mucosal site in 17 instances and was found in directly adjacent cutaneous lesions in 1 case. Of the remaining 6 cases, 1 was definitely granulomatous and possibly of mycotic origin (case 4 in table 2); 1 was associated with erythema multiforme and clinically resembled a Vincent's angina (case 12 in table 2); 2 were associated with a coccogenic infection type of reaction (cases 19 and 20 in table 2), and 2 were merely cited and not described (cases 21 and 22 in table 2). This leaves for evaluation 1 probable and 18 definite cases of histoplasmosis of the mucous membranes adjacent to the skin. Of these 19 cases, 7 involved granulomatous lesions and 16 ulcerative lesions, which for the most part were painful. Nodular lesions ranging in size from several millimeters up to a walnut were described in 5 cases, and these were tender in 3 instances. Hemorrhagic patches or crusts of various sizes were noted in 4 cases; fissures were present in 2 cases and perforation of the nasal septum in 3 cases.

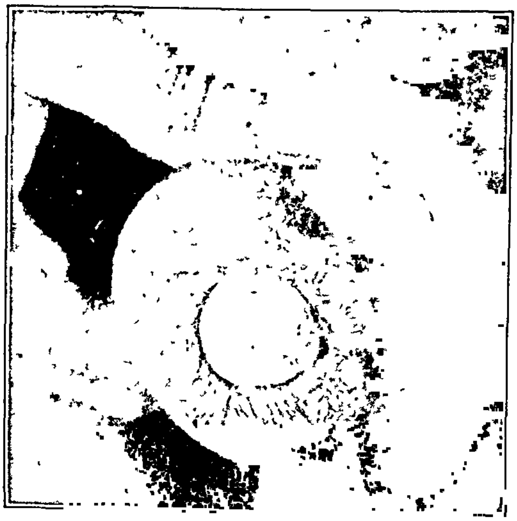

Fig 11 (case 3) —Ulcerations resembling syphilitic chancres at the anterior and posterior borders of the prepuce. There was moderate edema of the foreskin.

Lesions were present in the nose in 4 instances, on the tongue in 7, on the buccal and labial mucosae in 5, on the palate in 5, on the gingivae in 3 and about the hypopharynx in 7. Considered in the differential diagnosis were syphilis, carcinoma, leukemia, tuberculosis and leishmaniasis.

TREATMENT

Of the many agents used in the treatment of histoplasmosis, only antimony and sulfonamide compounds have thus far offered any encouragement in those cases in which progression beyond a purely localized involvement has occurred. Meleney[15] cites Mantel, Troy and Kendall, who treated a patient with histoplasmosis with an organic antimony compound[16] in the mistaken belief that they were dealing with an infection due to leishmania. The patient had a clinical remission while under treatment with this drug. Simson and Barnetson's[17] patient showed definite clinical improvement following the administration of an antimony compound, and as yet there has been no report of this patient's death. In the case of Palmer and others[18] the patient failed to tolerate an antimony compound[16] after the fifth injection. Several other cases[19] in which antimony compounds were unsuccessfully used have been recorded.

In case 2 of this paper the lesion of the tongue completely disappeared under continued sulfadiazine therapy, but even after a prolonged course of treatment microscopic sections still revealed H. capsulatum, and we have been unable to obtain the patient's readmission to the hospital. Other cases in which sulfonamide compounds, usually in small amounts, have been used unsuccessfully are reported.[20]

In case 3 the patient experienced healing of the penile ulcerations under sulfadiazine therapy. Repeated biopsies were all positive for H. capsulatum until April 1947, when all sections were negative. Chronic lymphedema and depigmented scars were residual. The patient appeared in good health when last seen, in April 1947.

Radium and roentgen therapy have been of value only in cases in which the lesion of histoplasmosis was entirely confined to a localized site. This is illustrated in the case cited by Parsons and Zarafonetis,[4] in which apparent cure was effected by radium therapy. Surgical intervention would probably have been equally effective in this case but was valueless in Moore and Jorstad's[21] case, in which wide excision was performed twice but further microscopic spread of the organism had undoubtedly occurred. In another instance[22] the local lesion of the tongue healed under radium therapy but the patient died several months later. No autopsy was performed, so the cause of death was not determined. In Humphrey's[19b] case temporary palliation was obtained from irradiation of the long bones, and in another case[19e] tenderness of the lingual lesion was temporarily alleviated following roentgen therapy. In another instance[4] roentgen radiation gave no relief.

COMMENT

At present the central portion of the United States appears to be the endemic focus of histoplasmosis. Parsons and Zarafonetis[4] have pointed out that 41 of the 71 cases reviewed by them were from this area, and 10 of these were from the state of Michigan. To these latter 10 cases may be added the 3 reported in this paper and 3 additional cases observed at the University Hospital which have not yet been reported.[23]

For the purpose of classification histoplasmosis may be divided into two categories. First, cases in which the portal of entry is primary in the skin and adjacent mucous membranes and second, those cases in which the portal of entry is a systemic one via the respiratory or gastrointestinal system and the cutaneous or mucosal lesions which do occur are from secondary invasion. Case 3 of this paper and the patient[4] whose lesion healed on radium therapy[4] are examples of the primary invasion, whereas case 1 of this paper and other cases[24] fall into the latter group and were the result of a hematogenous dissemination of the organism. However, except in those instances in which the lesion is so localized that complete extirpation will remove the disease, this classification is of far less prognostic significance than in blastomycosis. In the latter disease systemic invasion is usually fatal, but primary cutaneous blastomycosis may persist untreated for long periods of time and yet seldom causes death. In histoplasmosis any untreated lesion, whether primary or secondary, may go on to dissemination and finally a fatal termination, and the present methods of therapy have done little to improve this prognosis.

In addition to the actual invasion of the mucocutaneous tissues by H. capsulatum, the possibility of toxic and absorption type of cutaneous reactions must be considered. A toxic response to the systemic infection may well have been behind the purpuric, roseolar, vesicular and erythema-multiforme-like manifestations described in cases in which no organisms were recovered. In case 3 the patient had a fixed eruption on the left palm. However, the part played by drugs or other extraneous factors cannot be eliminated in several of these cases.

In differential diagnosis it is important to consider histoplasmosis in patients with anemia, leukopenia and fever, particularly if lymphadenopathy, splenomegaly or hepatomegaly are also present. No single symptom or group of mucocutaneous manifestations which are as yet apparent from the limited case reports would enable one to make a definite clinical diagnosis. The predominant lesion is an ulcerative granuloma which is usually covered by a crust, often painful and has little induration or peripheral inflammation. Neither the miliary tiny peripheral abscesses and sharply sloping vegetative border of blastomycosis nor the arcuate configuration of gummas are in evidence in most instances. Tuberculosis cutis must be differentiated from the papulonecrotic form of histoplasmosis, which in 1 case[19a] even presented apple-jelly nodules. Mucocutaneous leishmaniasis is perhaps the closest clinical entity to histoplasmosis, and here confusion of the two diseases in the laboratory is also a possibility. However, for the most part the geographic distribution of the two diseases has become quite different in the last few years. In Negroes lesions about the genitalia require differentiation of histoplasmosis from granuloma inguinale. Histoplasmosis is associated with regional adenitis, which helps to differentiate it from granuloma inguinale. As in case 3 of this paper, genital lesions of histoplasmosis may simulate a syphilitic chancre, but persistence of the lesion will differentiate the two.

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[15] Meleney, H. E.: Histoplasmosis (Reticuloendothelial Cytomycosis): A Review with Mention of Thirteen Unpublished Cases, Am. J. Trop. Med. **20:** 603 (July) 1940.

[16] Stibamine glucoside ("neostam").

[17] Simson, F. W., and Barnetson, J.: Histoplasmosis: Report of a Case, J. Path. & Bact. **54:** 229 (July) 1942.

[18] Palmer, A. E.; Amolsch, A. L., and Shaffer, L. W.: Histoplasmosis with Mucocutaneous Manifestations, Arch. Dermat. & Syph. **45:** 919 (May) 1942.

[19] (*a*) Baliña, P. L.; Negroni, P.; Basq, P., and Herrara, J. A.: Histoplasmosis de Darling: Primer caso sud-americano, Rev. argent. dermatosif. **25:** 491, 1941. (*b*) Humphrey, A. A.: Reticuloendothelial Cytomycosis (Histoplasmosis of Darling), Arch. Int. Med. **65:** 909 (May) 1940. (*c*) de Almeida, F., and da Silva Lacaz, C.: Cogumelo do gênero Histoplasma isolado de lesões de cromomicose: Associação de fungos nos lesões, Folia clin. et biol. **11:** 65, 1939. (*d*) Dean, L. W., Jr.: Histoplasmosis of the Larynx, Arch. Otolaryng. **36:** 390 (Sept.) 1942. (*e*) Kemper, J. W., and Bloom, H. J.: Histoplasmosis: Report of a Case, J. Oral Surg. **2:** 167 (April) 1944. Parsons and Zarafonetis.[4]

[20] (a) Anderson, W. A. D.; Michelson, I. D., and Dunn, T. M.: Histoplasmosis in Infancy: Report of a Case, Am. J. Clin. Path. **11:** 344 (April) 1941. (*b*) de Almeida and da Silva Lacaz.[19c]

[21] Moore, M., and Jorstad, L. H.: Histoplasmosis and Its Importance to Otolaryngologists: A Review with Report of a New Case, Ann. Otol., Rhin. & Laryng. **52:** 779 (Dec.) 1943.

[22] Henderson, R. G.; Pinkerton, H., and Moore, L. T.: Histoplasma Capsulatum as a Cause of Ulcerative Enteritis, J. A. M. A. **118:** 885 (March 14) 1942.

[23] Omitted in this report because of the absence of involvement of the skin or mucous membrane.

[24] Emmons and Olson.[7] Meleney.[15] Palmer, Amolsch and Shaffer.[18]

It is of interest that in 2 instances[25] histoplasmosis was associated with leukemia and in 1 with Hodgkin's disease.[4] A clinical differentiation between leukemia cutis and histoplasmosis was difficult, and even though H. capsulatum was found in the lesions, they may have originally been leukemic in nature. Histoplasmosis, particularly of the tongue, has been confused in several instances with carcinoma. In far advanced cases, the immobilization of the tongue has not been noted in histoplasmosis.

Other diseases that must be considered in a complete differential list include moniliasis, tuberculosis cutis orificialis, rhinosporidiosis, lupus vulgaris, sporotrichosis and coccigenic abscess or impetigo in those few cases characterized by suppurative processes. In addition South American blastomycosis, oriental sore and other tropical diseases merit consideration. An unequivocal diagnosis on a clinical basis alone cannot be made, but it can be strongly suspected, and proof can be obtained by histologic study of the lesions and by cultures made from infected material.

ABSTRACT OF DISCUSSION

Dr. Carl W. Laymon, Minneapolis: As was pointed out, histoplasmosis is essentially a systemic disease. I think most dermatologists have had very little experience with it. Dr. Curtis' paper is especially valuable from the point of view of differential diagnosis. After his presentation, it is easy to understand that this disease can mimic many other dermatoses and diseases of the mucous membrane. Christie and Peterson, of Nashville, yesterday in the Section on Pediatrics presented a paper on this subject. They, too, stressed that in patients with pulmonary calcification who had negative tuberculin tests, there was a high incidence of positive reactions to the histoplasmin test, so that in all probability there may be a benign or attenuated form of this organism such as Dr. Fred Weidman mentioned in discussing Dr. John Lamb's paper. As Dr. Curtis mentioned, a lapse of several years (from 1906 to 1925) occurred between the original description by Darling of 3 cases and the fourth case. It just happened that this fourth case was reported by two men from the University of Minnesota, Drs. Watson and Riley. It is of interest that one of the early cases occurred in a leprous person and in all probability the portal of entry in that case was through a lepromatous nodule. Another point which is interesting to speculate about is that there are many more cases of histoplasmosis in adult males than in adult females. Some believe that probably the adult male contracts the organism outdoors and then tracks it through the house and in that way the children playing and crawling around on the floor may get the disease. It has occurred in infants and young children, but it is infrequent in women. In the patients below the age of 10, the sex ratio is about equal in contrast to a 5 to 1 ratio of males over females. Since the central part of the United States, and especially Michigan, seems to be an endemic focus of this disease, Dr. Curtis has had really an unusually wide experience with it, and we are all fortunate to hear the results of his studies and observations.

Dr. John F. Kessel, Los Angeles: Dr. Curtis' paper is an excellent summary of histoplasmosis, with special reference to involvement of the skin and mucous membranes of man. His differentiation of these types of histoplasmosis into primary and secondary brings this disease into line with other systemic mycotic infections; for example, (1) coccidioidomycosis, in which cutaneous lesions are usually secondary to the disseminated type of disease, but which also may occasionally be primary in nature; for instance, a case in Los Angeles some years ago, in which the local lesion was on the shoulder. After diagnosis, cauterization was performed and the patient had no further disturbance and (2) torulosis, in which the lesions most commonly observed are in the central nervous system, but in which occasional local lesions without involvement of the central nervous system have been reported; for instance, the case reported by Drs. John C. Wilson and F. M. McKeever in Los Angeles, in which there was an infection of the knee and also a cutaneous lesion near the nipple. Amputation of the leg just above the knee and local roentgen therapy of the lesion of the skin resulted in cure. Histoplasmosis possesses certain parallels with leishmaniasis, which also involves the reticuloendothelial system. In leishmaniasis several different strains or species of organism are recognized, such as Leishmania donovani of kala-azar, which is primarily a systemic infection, and Leishmania tropica of oriental sore, which is a cutaneous infection. It is possible that differences in strain likewise occur in the histoplasma. Studies which I have in progress with cryptococci, some isolated from lesions of the central nervous system and others from cutaneous lesions, indicate that differences between strains occur in this fungus. It is of special significance that primary cutaneous and mucosal histoplasmosis tends to become generalized more frequently than is the case in certain other mycotic infections, for example, blastomycosis. Three cases of histoplasmosis have been reported from the state of California. In the first case the patient had previously resided in Louisiana, in the second in Tennessee and in the third in the North Central United States. These observations support the impression that histoplasmosis is not indigenous to the Pacific Southwest. Of these 3 cases only in the third was there exhibited a mucosal lesion which involved the tongue. The question of the specificity of the histoplasmin test and its value in diagnosis or survey work is still open for study. The workers who have reported on this so far have all been careful investigators, and yet there is some difference of opinion among them.

Dr. Frances Keddie, San Francisco: I am sorry that Dr. Miller is not here to discuss this with you. He and I are interested in histoplasmosis because of the case we saw here in San Francisco. In going over the literature of the 88 cases we found reported, 45 patients had lesions on the skin or mucous membranes, and 28 of these had lesions on the tongue, on the oral mucosa, in the larynx or in the pharynx. These lesions began as papules and frequently went on to ulceration. These usually were not tender when they were papules but became tender when they ulcerated. Sometimes the process was extensive, and in those cases there was destruction of the larynx and of the pharynx. The lesions on the cutaneous surfaces were much like those in the mouth, in that they began as papules and frequently went on to ulceration, forming a sharply punched-out ulcer. In some instances these ulcers had been present from eight to sixteen years. Purpura was mentioned in a few instances. It was usually terminal and occurred principally in children. The lesions that interested us particularly were those which resembled secondary infection, such as impetigo, furuncles and abscesses. These were mentioned in 4 patients who had generalized histoplasmosis; it was not indicated whether the organism was recovered from these lesions that looked like secondary infection. In 4 instances there was dermatitis, either local or generalized, and in 1 case of Hansmann and Schenken a generalized dermatitis had been present for sixteen years. The diagnosis was made by a biopsy from the skin. I have been impressed in going over the literature that the diagnosis can be made by sections from the skin and by finding the organism present in those sections. The patient we saw was a problem. He had histoplasmosis of the tongue, which we diagnosed by biopsy. He had had a lymph node removed from his neck six years previously, which was diagnosed Hodgkin's disease, and in getting this section and going over it after we made our diagnosis, we were able to find a few cells that resembled histoplasma. We took an auxiliary lymph node and found histoplasma in that. The patient had fever and was emaciated. He was in the hospital. We assumed that his generalized infection was histoplasmosis, although we were never able to find histoplasma in the blood

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25. (a) Riehl, G.: Durch pathogene Sprosspilze bedingte Granulome, Arch. f. Dermat. u. Syph. **148**: 392, 1925. (b) Williams, R. H., and Cromartie, W. J.: Histoplasmosis: Report of a Case, Ann. Int. Med. **13**: 2166 (May) 1940.

or in bone marrow smears. We gave him penicillin and also sulfadiazine in large doses. We also treated him with stibamine glucoside ("neostam"). He died from what we thought was a terminal bronchial pneumonia. We discovered at autopsy that his histoplasmosis was probably of a benign form. He had no histoplasma present any other place in his body. He had Hodgkin's disease of the lymph nodes, a Hodgkin's sarcoma of the liver and of the spleen, and he had a miliary tuberculosis which had become disseminated. So it is easy to understand that our attempts at treating histoplasmosis had little effect.

Dr. Fred D. Weidman, Philadelphia: In addition to the intrinsic value of this paper I am sure that all of us have been delighted in its manner of presentation. It stimulated thought in many directions. The histologic sections of 1 of the cases demonstrated the presence of granulomas in the liver, which histologically appear to be those of tuberculosis. I wonder whether the patient had tuberculosis in addition to histoplasmosis. I think the time is ripe to advance the theory at least that preexisting, particularly granulomatous diseases, can act as predisposing factors for the superimposition of a fungous infection. Dr. Keddie has just cited such a case, in which Hodgkin's disease was associated with fungous infection in the tongue, and a number of years ago Dr. Fitchett and I reported a case of Hodgkin's disease in which torulosis was present. I wonder whether such a thesis could be reconciled with what is so notorious in immunologic tests for fungous disease, particularly the cutaneous reactions. In the literature time and time again cross reactions are reported between the tuberculin, coccidioidin, blastomycetin tests and so forth. Does this connote the presence of antigens common to Mycobacterium tuberculosis (or other micro-organisms) and the fungous agent, and does the antigen in the Myco. tuberculosis or other micro-organism sensitize the person, more easily furthering the development of a fungous infection? The second point I would like to raise—Dr. Kessel anticipated me—is the matter of the future development of the antigens for skin testing. It is remarkable that physicians have been confining themselves to the employment of material from cultures. Now, all are aware of the extreme dimorphism of the fungi; most of them appear different in the test tube than in tissues. This must connote a difference also in the physiology and, with that, the production of differing antigenic substances. Isn't it more reasonable to assume that the specific antigens in the case would be more faithfully represented in the tissue form of the parasite than in the culture tube form? This does not raise any serious difficulty; tissue forms can be obtained. In the lepromin and the Frei tests, for example, tissue is used, but the tissue forms of the fungi can be secured on blood agar in the incubator and also in the chick embryo. I would suggest that increasing attention be paid in this direction in further attempts to improve the specificity of immunologic tests for the fungi.

Dr. Harry L. Arnold, Honolulu, Hawaii: I would like to extend slightly Dr. Weidman's remarks on the question of depression of production of antigens by tuberculosis and subsequent infection with some other organism. It might be well to allude to another possible explanation of these relationships, namely, the involvement of the reticuloendothelial system, which must be considered whenever one is considering the production of antigen. It is notorious that in leprosy, which is, in lepromatous form at least, essentially a reticuloendothelial disease, tuberculosis has an extremely high incidence. About 50 per cent of patients with lepromatous leprosy contract, and die of, tuberculosis; and histoplasmosis is also a disease which essentially involves reticuloendothelial cells. Possibly in this disease, as perhaps also in leprosy, there is a blocking of the reticuloendothelial system with resultant increased susceptibility to another infection.

Dr. Louis A. Brunsting, Rochester, Minn.: This has been a stimulating discussion of a condition in which the skin reflects signs of systemic disease. I am sure that none is better qualified to do this than Dr. Curtis. Perhaps at the Centennial Program of the American Medical Association next year the Section on Dermatology may join one of its day's meetings with the Section on Internal Medicine or Pathology to present a symposium on the systemic aspects of cutaneous disease. The subjects of acute disseminate lupus erythematosus and sarcoidosis, among others, would lend themselves well to such a discussion. As Dr. Curtis pointed out, the early lesions of histoplasmosis may be visceral or may appear first on the skin or mucous membranes, and the differential diagnosis includes carcinoma, tuberculosis, sarcoidosis or rhinoscleroma. The first step toward a correct diagnois is to keep histoplasmosis in mind; repeated cultures and biopsies may be needed before the organism is identified. The histoplasmin skin test deserves a wider application than it has had in the past, particularly in unusual ulcerative processes of the mouth and nasopharynx. A positive or negative skin test should not be given too much weight by itself but should be interpreted in respect to the overall picture.

Dr. Arthur C. Curtis, Ann Arbor, Mich.: It is not my desire to leave the impression that the sulfonamide drugs are specific for histoplasmosis. The last 2 cases in our report were benign forms of histoplasmosis, but 2 cases of benign histoplasmosis showing evidence of healing under sulfadiazine therapy are not sufficient evidence to accredit the drug for these results. The statements of Drs. Weidman and Arnold in regard to the relationship of granulomas to other infectious diseases were most interesting. The first patient did have tuberculosis; in fact, the organism was demonstrated in the tissue of the liver and by guinea pig inoculation. Other areas of the liver disclosed Histoplasma capsulatum. It is also striking that of 88 cases of histoplasmosis reported 4 have been associated with some form of lymphoblastoma. Reports have shown the association of tuberculosis and histoplasmosis to be unusually common.

NEUTRALIZATION TESTS FOR DIAGNOSIS OF HUMAN VIRUS ENCEPHALITIDES

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and
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The virus neutralization test is important because it can be used to help determine the prevalence of a disease, the geographic dissemination of its virus, the titer of antibody in an antiserum or the principles underlying the immunologic factors of an infection. One can with known virus demonstrate its specific antibody, and one can with known antibody reveal the identity of a virus. The test is simple in application when an appreciable amount of antibody is present; the antibody is detected by adding undiluted fluid, such as blood serum, which contains suspected antibody to suspensions which contain a known amount of virus. After varying periods of contact at certain temperatures, the mixture is injected by definite routes into selected species of animals, which are then watched for virus effect (i. e., no neutralization) or for no effect whatever (i. e., neutralization). However, when the serum contains antibody sufficient to neutralize only 1, 5, 10 or even 25 units of virus instead of hundreds of thousands of units, then it is like the task of Sisyphus—without end and, for the moment, without hope—to explain or indicate the significance. This is not intended, however, as a disquisition on the significance of serums containing borderline or traces of neutralizing substance. This is a report on the methods of performing the test which laboratories have evolved from experience; it will give a fairly accurate picture of a practical test and some of the underlying principles.

THE VIRUS ENCEPHALITIDES

The subject is limited to the human virus encephalitides. They are as now identified: (*a*) primary virus infections; (*b*) suspected, primary virus infections, and (*c*) virus encephalitides caused by familiar viruses not

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From the Laboratories of the Rockefeller Institute for Medical Research.

ordinarily encephalitogenic. Poliomyelitis requires special consideration and will not be discussed here.

The primary virus encephalitides comprise Eastern equine encephalomyelitis, Western equine encephalomyelitis, Venezuelan equine encephalomyelitis, St. Louis type encephalitis, Japanese B encephalitis, Russian Far East (tick-borne, spring-summer) encephalitis, acute hemorrhagic meningoencephalomyelitis (leukoencephalitis), lymphocytic choriomeningitis, pseudolymphocytic choriomeningitis, swineherd's disease, louping-ill, acute encephalitis due to rabies and Sabin B virus. The first six are known as the summer, or epidemic, encephalitides (of which Eastern and Western equine and St. Louis encephalitis are prevalent in this country); the remainder, as endemic virus encephalitides. They have been called the arthropod-borne virus encephalitides by Hammon and Reeves.

The suspected primary virus encephalitides are newly discovered, and their role is significant because antibodies have been found in the blood of man and the viruses are neurotropic in laboratory animals. Clearcut clinical infections of the encephalitic type are yet to be seen. The viruses are as follows: West Nile, Bwamba fever, Semliki forest, Bunyamwera and Hammon-Reeves, California. The first two have been recovered from the blood of man, the remainder from mosquitoes only. Other suspected primary virus encephalitides are von Economo's disease and acute disseminated encephalomyelitis, the virus etiology of the two is not as yet established.

Virus encephalitides can be caused by ordinarily nonencephalitogenic viruses, which are those of herpes simplex, measles, lymphogranuloma venereum, mumps and infectious mononucleosis (probably due to a virus).

While human secondary or postinfection encephalitis has not been shown as yet to be caused directly by a virus, the malady does follow within the definite time of a few days to a few weeks various virus infections, such as measles, mumps, influenza, chickenpox, vaccinia, smallpox, infectious hepatitis and after vaccination against smallpox and rabies. The group is here mentioned because its differentiation from the virus encephalitides is sometimes required.

Although this list of encephalitic infections is lengthy, certain of the known general principles, the practical application and the methods of procedure of the neutralization test may be applied to almost all the mentioned maladies and their viruses; later on some noteworthy exceptions to general rules will be brought out.

CERTAIN GENERAL PRINCIPLES

The Time Factor.—At the outset it is admitted that the nature of the neutralization reaction is unknown. It is generally accepted, however, that the presence of significant amounts of neutralizing antibody indicates previous exposure to and infection by a virus, even though in many instances in the absence of apparent disease. This factor is the basis of the "two or three phase" test; i. e., under ideal conditions a specimen of serum obtained as early as possible during the acute phase of illness, another one or two weeks after the onset and a third, if necessary, taken still later, three to eight weeks after the onset, are subjected to the neutralization test. Since infection by a virus may be clinically inapparent, normal persons may show specific neutralizing antibody; hence a single positive specimen may be misleading, especially if the person has lived in areas in which the virus is endemic, as are St. Louis and Western equine virus in California and Washington (Buss and Howitt[1]; Hammon[2]). The reason for selecting the intervals from the earliest time to eight weeks after onset for test is that this antibody appears at varying times after infection with different viruses. In Western equine virus infection neutralizing antibody is evident as early as the fourth day after onset; in St. Louis and Japanese B encephalitis, three to seven days to three weeks; in lymphocytic choriomeningitis, not until about the sixth to eighth week after onset.

Comparative Tests.—It becomes apparent that the success of a diagnostic procedure of virus neutralization depends on the precision with which, in the comparison of serums obtained in the acute and convalescent stages of infection from the same patient, a definite increment of antibody in the later sample is revealed. To measure this increase in antibody (or in the protective power of an antiserum) one of two methods may be used. (1) Undiluted serum is tested against varying quantities of virus; for example, acute-phase serum may show no neutralization of as little as 10 units of virus, serum of one week after onset, may neutralize 100 units and that two weeks after onset 100,000 units of virus, the limit of this hypothetic test. At the limit, however, no difference between two different serums can be discerned, unless (2) the method of Morgan and Olitsky[3] is employed. They offered evidence to show that the capacity of undiluted serum to neutralize virus may not be different for different samples except by means of graded serum dilutions, in which a true antibody titration is made; then the finer shades or even pronounced degrees of difference between serums are manifested.

Animals Used and Route of Injection of Serum-Virus Mixtures.—There are two choices of laboratory recipients for serum-virus mixtures, when the neutralizing capacity of a serum is to be tested: first, the serum-virus mixtures are injected into an animal which is uniformly and highly susceptible. For the encephalitis viruses this is generally the albino mouse; however, for the Sabin B virus rabbits are used, and often for lymphocytic choriomeningitis the guinea pig is used. A second choice way is the injection of serum-virus mixtures into developing chick embryos (Burnet, Keogh and Lush[4]). As a rule the latter technic merely supplements the one employing animals or is used only for special purposes.

When the mouse is the animal of choice one takes into account its strain and age. A selectively inbred strain proved to be of high and uniform susceptibility, such as the Swiss W or the Rockefeller Institute strain, should be used; Casals and Schneider[5] have demonstrated that such animals may be essential for certain viruses. The age of the mouse is also important. It has been shown[6] that an increasing resistance develops in

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[1] Buss, W. C., and Howitt, B. F.: Human Equine Encephalomyelitis in Kern County, California, 1938, 1939 and 1940, Am. J. Pub. Health **31:** 935-944 (Sept.) 1941.

[2] Hammon, W. M.: Encephalitis in Yakima Valley: Mixed St. Louis and Western Equine Types, J. A. M. A. **117:** 161-167 (July 19) 1941; correction, ibid. **117:** 802 (Aug. 30) 1941.

[3] Morgan, I. M., and Olitsky, P. K.: Immune Response of Mice to Active Virus and to Formalin-Inactivated Virus of Eastern Equine Encephalomyelitis, J. Immunol. **42:** 445-454 (Dec.) 1941.

[4] Burnet, F. M.; Keogh, E. V., and Lush, D.: The Immunological Reactions of the Filterable Viruses, Australian J. Exper. Biol. & M. Sc. (supp.) **15:** 231-368 (Sept.) 1937.

[5] Casals, J., and Schneider, H. A.: Natural Resistance and Susceptibility to Russian Spring-Summer Encephalitis in Mice, Proc. Soc. Exper. Biol. & Med. **54:** 201-202 (Nov.) 1943.

[6] Olitsky, P. K.; Sabin, A. B., and Cox, H. R.: An Acquired Resistance of Growing Animals to Certain Neurotropic Viruses in the Absence of Humora Antibodies or Previous Exposure to Infection, J. Exper. Med. **64:** 723-737 (Nov.) 1936. Sabin, A. B., and Olitsky, P. K.: Influence of Host Factors on Neuroinvasiveness of Vesicular Stomatitis Virus: Effect of Age on Invasion of Brain by Virus Instilled in Nose, ibid. **66:** 15-34 (July) 1937; III. Effect of Age and Pathway of Infection on Character and Localization of Lesions in Central Nervous System, ibid. **67:** 201-228 (Feb.) 1938.

PROCEDURES OF THE NEUTRALIZATION TEST

The neutralization test now to be described is that performed in our laboratory for more than twenty years; it includes the modification which Drs. H. R. Cox, C. G. Harford, I. M. Morgan, A. B. Sabin and other associates have introduced from time to time.

Preparations of Dilutions of Virus and Serum.—The stored, frozen suspension when thawed offers a 1:5 dilution of virus, which with an equal amount of serum becomes a 10^{-1} dilution. From the thawed suspension, dilutions as needed of 1:50, 1:500 and so on are made for final virus dilutions of 10^{-2}, 10^{-3} and so forth. The diluent is 10 per cent rabbit serum in isotonic solution of sodium chloride. The tubes receiving virus are kept in a vessel containing ice in order to keep the material cold until the time for injection in the animal. Of each dilution to be tested, 0.2 cc. is placed in the tube for testing. To each is added 0.2 cc. of undiluted, negative human serum. (If this is not available 10 per cent *normal rabbit serum can be substituted.) This is the* control series; for the test series the unknown serum for diagnosis is added instead. The tubes are incubated at 37 C. (water bath) for two hours; then they are placed in ice water until the contents is injected intracerebrally in animals (5 mice at least for each dilution).

The dilutions of virus to be used as control are such that at the higher dilutions all animals will survive and at the lower all will succumb. For the test serum, dilutions should be employed which indicate either no neutralization or neutralizations of at least 1,000 LD_{50} units of virus. For example, if the LD_{50} of the virus employed is generally 10^{-8}, the control series should be made up with virus dilutions of 10^{-6}, 10^{-7}, 10^{-8} and 10^{-9} and the test serum series with dilutions of 10^{-4}, 10^{-5}, 10^{-6} and 10^{-7}. When two or three phase serums are studied in a comparative way, Hammon [17a] has advised the use of fivefold dilutions of virus instead of tenfold, as is done here and elsewhere.

Highest dilutions of the test series should be injected into animals first, and the control series should be introduced last. Mice are observed for ten days for the equine viruses, except for recent isolations, which may be delayed in effect; then fourteen days should suffice, as for St. Louis encephalitis virus. For Russian Far East and Japanese B encephalitis virus three weeks of observation are required. Animals that die within twenty-four hours in equine virus tests are presumed to have succumbed from nonspecific causes. In the case of other encephalitis viruses deaths occurring up to forty-eight hours should be considered nonspecific; deaths on the third and later days should be ascertained as being caused or not caused by the virus inoculated intracerebrally. Care must be taken to eliminate the characteristic Theiler's virus disease arising spontaneously in mice (flaccid paralysis; muscular atrophy; apparent well-being otherwise of the affected animal) after inoculation of the serum-virus mixtures of the neutralization test. Finally, in such cases as the Russian Far East encephalitis virus, in which the incubation period is prolonged over several days and the animals are highly susceptible to extraneural exposure to the virus, care should be taken to isolate the inoculated animals by dilutions, i. e., all mice receiving the same dilution should be placed in one box, and sick and dead mice should be promptly removed from the group. This precaution is to avoid secondary, contact infections not related to the material injected.[14]

If it is essential to obtain information concerning the significance of neutralization with low multiples of LD_{50} virus,[14] tests can be repeated by the more sensitive extraneural (peripheral) method of Olitsky and Harford [7] or its modification by Lennette and Koprowski,[8] as already mentioned; these tests, of course, require special facilities, as has been stated. Furthermore, by this method there may at times be a tenfold diminution in the titer of virus; the whole range of virus dilutions should therefore be included. The success of the test will depend on the use of larger numbers of mice: at least 10 for each dilution.

In comparative tests with acute and convalescent serums from the same person, in cases in which additional information is desired on the more exact antibody content, the method [3] of serum dilution may be pursued to advantage. When dilutions of the serum are carried out, the test may then be performed either with constant amounts of virus, e. g., 10 or 100 LD_{50} units, or with varying amounts of virus diluted fivefold or tenfold.

SUMMARY

A description is here given of the neutralization test for the diagnosis of human virus encephalitides, including remarks on certain of its general principles and the details of the technic employed in this laboratory.

Sixty-Sixth Street and York Avenue.

ROENTGENOGRAMS OF THORAX THAT SUGGEST CARCINOMA OF STOMACH

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Diagnosis of early malignant lesions at the cardia of the stomach has long been considered difficult from both clinical and radiologic points of view. The cardia has been referred to as the silent region of the stomach because there are seldom any characteristic early symptoms of pathologic conditions of the cardia. During roentgenoscopic examination a lesion in this region can be overlooked unless the roentgenologist is thinking of it and proceeds with appropriate and thorough methods of search.

Until the recent years when improvements have been made in methods of anesthesia and particularly in the technical approach by transthoracic resection of the stomach, there has been little incentive for improvement of the means of diagnosis of carcinoma at the cardia because so little could be done therapeutically for patients with this disease.

Transthoracic resection of the stomach now has become a generally accepted surgical procedure, and a number of patients can be benefited materially if diagnosis is made early enough, before metastasis has occurred. For this reason any adjunct to early diagnosis is worthy of consideration.

ROENTGENOSCOPIC OBSERVATIONS

Roentgenoscopic diagnosis of carcinoma of the cardia has been described in the literature (Stewart and Illick,[1] Buckstein [2] and Kirklin [3]). In the majority of

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From the S[illegible] Roentgenology, Mayo Clinic.

Read befor[illegible] at the Ninety-Fifth Annual Session of the [illegible], San Francisco, July 3, 1946.

(Footnotes on next page)

cases the diagnosis may be made most readily by examination while the patient is in the vertical position. Then, in some cases, the diagnosis can be confirmed by examination of the patient while he is in the recumbent position. Small polypoid carcinomas at the cardia often will be missed if examination is made with the patient only in the recumbent or Trendelenburg position because small lesions may be obscured by the barium.

In many cases of carcinoma of the cardia the lesion can be recognized, or at least strongly suspected, at the beginning of roentgenoscopic examination of the stomach when the patient stands behind the screen and before the opaque meal is given. Normally the gas bubble at the cardia is smoothly symmetric and transradiant. A tumefactive mass which projects from the medial wall into the gas bubble can be seen at this time. More extensive tumefactive or infiltrative lesions may cause a deformity of the fundus of the stomach or even complete absence of the gas bubble.

Barium should be given slowly and each swallow watched as it passes through the lower part of the esophagus into the stomach. Signs of a lesion at the cardia for which the roentgenologist should look are: (1) distortion or partial stenosis of the lower part of the esophagus with or without dilatation above this area, (2) abnormally retarded outflow of barium into the stomach (due to partial obstruction by the growth), (3) continuous outflow of barium instead of normal spurting (indicating involvement of the esophagogastric junction with loss of normal sphincter-like control) and (4) polypoid growths which project as rounded prominences and cause deviation of the path of the barium. Less frequently the column of barium splits as it hits the tumor.

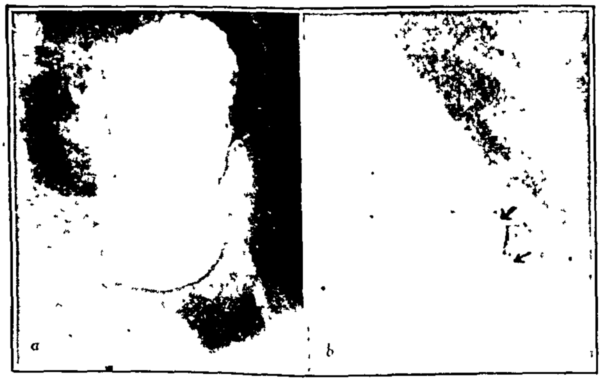

Fig. 1 (*a*).—Moderately extensive carcinoma at the cardia; (*b*), the thorax in the same case, immediately after roentgenoscopic examination of the stomach. The barium-coated, lobulated, malignant mass may be seen on the medial portion of the gas bubble of the cardia.

After a small amount of barium has been given, pressure should be applied over the dependent portion of the stomach in order to force the barium up into the cardiac portion. In this way the mucosa is coated and further study of the internal relief pattern is possible.

Other shadows which are seen occasionally in the gas bubble and which must be differentiated are: 1. Apex of the heart (pulsates and disappears from bubble on deep inspiration): In a routine roentgenogram of the thorax the shadow of the heart seldom causes any diagnostic difficulty, because the roentgenogram is taken after the patient has inspired deeply. 2. Spleen (on greater curvature side): Malignant lesions of the cardia are most often on the side of the lesser curvature. 3. Glandular metastatic growths or other masses (uncommonly seen): All these shadows are smooth, sharp and regular in margin, and in the roentgenoscopic examination with barium the overlying rugae are seen to be normal.

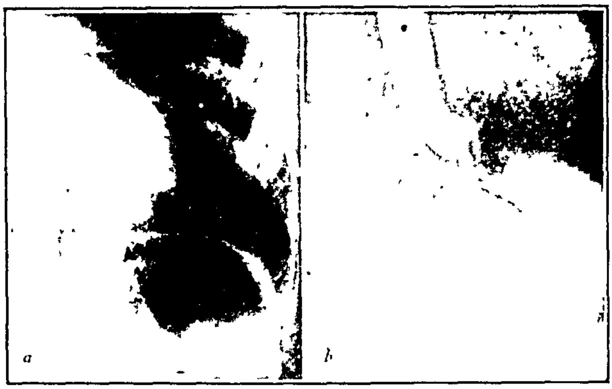

Fig. 2 (*a*).—Thorax with gas bubble of the cardia in which a lobulated mass can be seen on the medial aspect of the gas bubble; (*b*) esophagus and stomach in the same case, showing annular carcinoma of the lower part of the esophagus and the cardiac portion of the stomach.

Benign tumors in the cardia are infrequent. Therefore, when a tumor is present it is likely to be malignant. Other lesions which must be differentiated from carcinoma at the cardia are benign stricture and diverticulum of the lower part of the esophagus and cardiospasm. Extension of carcinoma of the esophagus into the cardiac end of the stomach produces a deformity similar to that produced by carcinoma which originates in the cardia and extends into the esophagus.

ROENTGENOGRAPHIC OBSERVATIONS

An ordinary roentgenogram of the thorax of the average-sized person generally includes the upper portion of the abdomen along with the thorax. This, then, includes the cardiac end of the stomach, and the gas bubble of the stomach is visible in the majority of cases. Therefore, if a mass is present it is visible within the gas bubble (fig. 1).

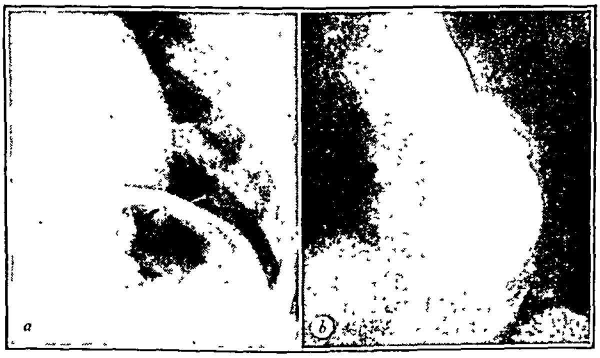

Fig. 3 (*a*).—Thorax: there is an irregular mass projecting from the medial wall of the cardia. The diagnosis of carcinoma was confirmed at operation; (*b*) same case showing the esophagus and stomach three weeks after a successful transthoracic, transdiaphragmatic resection of the lower part of the esophagus and the cardiac portion of the stomach.

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1. Stewart, W. H., and Illick, H. E.: Roentgen Diagnosis of Carcinoma at the Cardia, Am. J. Roentgenol. **32:** 43-51 (July) 1934.
2. Buckstein, J.: Clinical Roentgenology of the Alimentary Tract, Philadelphia, W. B. Saunders Company, 1940, p. 187.
3. Kirklin, B. R.: Roentgenologic Diagnosis of Cancer of the Cardia, Am. J. Roentgenol. **41:** 873-878 (June) 1939.

During 1945, 68 cases of tumor of the cardiac portion of the stomach with or without involvement of the esophagus were encountered at the Mayo Clinic. The lesion in each case was seen on roentgenoscopic examination. In some of these cases the diagnosis was suspected from the roentgenogram of the thorax; hence, this roentgenogram was reviewed in each case. When this was done a tissue mass which appeared to be soft and which projected from the lesser curvature side of the stomach into the gas bubble was observed in 35, or about half, of the cases. Although the diagnosis may not be made definitely when this projection is observed, existence of a lesion should be suspected and permission to carry out further roentgenoscopic examinations of the stomach should be requested.

In 21, 31 per cent or about a third, of the cases the mass caused an obvious defect. In several cases the deformity was as obvious in the roentgenogram of the thorax as in the roentgenogram of the stomach which was taken with the patient in a recumbent position (figs. 2 and 3). In some cases it was more obvious. In another 14 cases the defect was less obvious but was sufficiently apparent for the examiner to suspect the presence of a tumor and to request further study of the stomach. Lesions were seen more easily in roentgenograms in which the exposure was relatively heavy than in those in which it was light.

SUMMARY

The roentgenologic diagnosis of carcinoma of the cardiac end of the stomach is described. The importance of observing the air-filled upper segment is stressed because many diagnoses can be made or suspected without, or before, the use of radiopaque mediums. This segment can be observed on roentgenoscopic examination and also in routine roentgenograms of the thorax. A shadow which is caused by a tumor mass in the cardia and is seen in the gas bubble will sometimes be so clearly visible that the diagnosis can be made or at least suspected from this examination alone.

ABSTRACT OF DISCUSSION

Dr. Wilbur Bailey, Los Angeles: Dr. Kirklin's method of diagnosing cancer of the fundus of the stomach without even using barium is somewhat demoralizing to those of us who not only examine patients in the upright position with barium but then rotate them into numerous different positions when they are supine. Even then the diagnosis of carcinoma is difficult to make. Dr. Kirklin is to be congratulated on discovering so many carcinomas in films which were made for the purpose of examining the chest. On a few occasions my associates and I have made similar discoveries and have felt that we had accomplished something decidedly out of the ordinary. It is always well carefully to examine the left leaf of the diaphragm above the stomach bubble. The interval between the base of the lung and the stomach bubble should be no greater than the thickness of the left leaf of the diaphragm and the stomach wall. When this thickness exceeds more than a few millimeters, one should suspect infiltration of the stomach wall. Suggestions have been made that by way of economy 11 by 14 or 14 by 14 inch (28 by 36 or 36 by 36 cm.) size films should be used in thoracic examinations. Under these circumstances the left upper quadrant of the abdomen and the stomach bubble might be eliminated entirely—a fact which would make such film economy seem undesirable. Dr. Kirklin has done a beautiful piece of work, and I am sure we will all keep our eye on the left upper quadrant in roentgenograms of the chest from now on.

PROPHYLAXIS AGAINST OPHTHALMIA NEONATORUM

Clinical Comparison of Penicillin and Silver Nitrate: A Preliminary Report

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Sixty-seven years ago Credé, an obstetrician of Leipzig, Germany, first used silver nitrate in prophylaxis against ophthalmia neonatorum. With a small glass rod he instilled a single drop of 2 per cent silver nitrate into each eye of the newborn immediately after birth. Before the instillation, the eyes were cleansed with ordinary water and, afterward, were "cooled for twenty-four hours by means of a linen flap which had been saturated with salicylated water (2:100)."[1]

The silver nitrate drop method for prophylaxis became popular almost immediately and has remained so up to the present time. In Johnson's digest of the laws relating to ophthalmia neonatorum (1940), silver nitrate is mentioned most frequently as a preferred germicide.[2]

However, an element of opposition has existed. Even during Dr. Credé's time, objection arose because of the intense irritation which silver nitrate occasionally produced.[3] Hartman has placed the incidence of chemical conjunctivitis at about 4.3 per cent.[4] Von Hahn pointed out that silver nitrate will become more concentrated through the evaporation of the water unless the bottle is tightly stoppered. Drops left at the mouth of a bottle may form crystals; when the bottle is used for the next patient these crystals may be washed into the eye.[5] According to Stein, when a solution of silver nitrate decomposes with time there is a liberation of minute quantities of nitric acid, which causes severe irritation.[3] Bunney pointed out that if the solution is kept in an ampule containing yellow wax, the yellow wax will cause the silver nitrate to deteriorate to give an acid solution with a p_H of about 2.2 with a deposition of a black precipitate on the walls of the ampule.[6]

The solubility of silver nitrate is 75 per cent at a temperature of 86.1 F.[4] Thus there exists the danger of using a solution of a concentration higher than intended. Instances are recorded of infants being made blind by the use of a solution too high in concentration.[5]

The instillation of a 1 per cent solution of silver nitrate into the adult eye causes pain. I had a drop of fresh 1 per cent silver nitrate instilled into the conjunctival sac of one eye. An immediate painful discomfort was experienced, associated with lacrimation, conjunctival redness and the formation of a white curdlike exudate. I experienced some residual discomfort for four hours after this instillation.

Pharmacologically, silver nitrate is designated as a caustic, an astringent and a disinfectant. The dis-

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Acknowledgment of their assistance is made to Laura N. Loeb, B.S., and Ph.D.; also to Miss F. V. Illing, R.N., and Mr. of the Memphis and Shelby County Health Department.

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infectant action of the compound is due to the free silver ion; its bactericidal property is a result of its combination with the protein of the micro-organism. Unfortunately, it also combines with proteins of the tissues; this explains its painful and destructive action.[7]

The most serious criticism of the use of silver nitrate is the doubtfulness of its value in the prevention of infectious acute conjunctivitis of the newborn. In 1935 Lehrfeld analyzed the records in 28,000 births occurring in six hospitals over a period of five years. He found the incidence of ophthalmia neonatorum to be 2.2 per cent.[8]

During the latter part of the nineteenth century, inflammation in the eyes of the newborn was thought to be of gonorrheal origin. Even as late as 1915 some still held to this opinion, for Van Blarcom wrote to stress that other causes were possible.[9] Thomas in 1928 called attention to the fact that Staphylococcus aureus can be the causative organism of acute purulent conjunctivitis of the newborn.[10] Among recent investigators extensive work has been done by Sorsby and associates in England in determining the causative organisms. In a series of 591 cases of ophthalmia neonatorum, published in 1942 and 1944,[11] the staphylococcus was most frequently the causative organism. The gonococcus was next in frequency, bacilli (diphtheroids predominant) third, and other cocci (gram-positive cocci, meningococci and pneumococci) fourth.

Today the term ophthalmia neonatorum is no longer synonymous with gonorrheal ophthalmia. It is now applied to all inflammations of the eye occurring within two weeks after birth. The time element of "within two weeks" is that usually found in the laws governing prophylaxis.[2]

Now, as before, the gonococcus is the organism which demands most attention for the prevention of blindness. But according to Thompson conjunctivitis caused by the pneumococcus, if once well established, can be equally destructive.[12] Ideal prophylaxis would be that which would destroy or inhibit the growth of these two organisms and as many other causative organisms as possible.

Since the discovery of penicillin, investigators have turned their attention toward its properties in relation to the eye. In 1929 Fleming used the human conjunctiva to test his newly discovered crude filtrate of penicillin for irritation. Irrigation every hour for a day produced no irritating effect.[13] Leopold and La Motte demonstrated that penicillin does not pass through the cornea into the aqueous humor of the rabbit's eye unless the cornea has been abraded or has become inflamed. They applied 4 drops of penicillin in isotonic solution of sodium chloride in a concentration of 500 Oxford units per cubic centimeter into the conjunctival sac. They also showed that corneal epithelium regenerates at approximately the same speed with hourly local applications of penicillin as when uninfluenced regeneration is allowed to take place.[14]

On the other hand, Struble and Bellows sh when a concentration of 20,000 units of penici cubic centimeter of isotonic solution of sodium ch and an excess of solution is used penicillin does pe trate the cornea. They also stated that constant contact of penicillin in a concentration of 20,000 units per cubic centimeter of isotonic solution of sodium chloride with the cornea of a rabbit will produce no visible change after staining with fluorescein. A solution containing 10,000 units per cubic centimeter dropped into the conjunctival sac of the human eye will produce only slight smarting but no alteration in the corneal epithelium as revealed by examination with a slit lamp and fluorescein staining.[15]

Von Sallmann, also using rabbits' eyes, found that the intravitreal injection of 10 to 100 Oxford units of penicillin does not cause any damage to the retina, lens or optic nerve. Only negligible lesions were produced by the injection of 250 and 500 units.[16] According to Tooke, penicillin can be safely injected into the aqueous humor of the adult eye in concentrations of 4,000 to 6,000 units per cubic centimeter.[17] Ingalls flushed the anterior chamber of the eye with 20 cc. of a solution of penicillin (containing 3,300 units per cubic centimeter) after surgical treatment of penetrating wounds of the cornea, and satisfactory results were obtained.[18]

Patients with gonorrheal ophthalmia have been successfully treated with penicillin. Griffey reported the treatment of a patient with gonorrheal conjunctivitis by the use of penicillin given intramuscularly.[19] McCullough reported a case of sulfathiazole-resistant gonococcic conjunctivitis in an adult which yielded to a combination of topical (1,000 units per cubic centimeter) and parenteral administrations of penicillin.[20] Seelig treated a patient by subconjunctival injections and local instillations (500 units per cubic centimeter).[21] Lewis reported the use of penicillin, local (1,000 and 2,500 units per cubic centimeter) and systemic administrations combined, in the treatment of 30 patients with results better than those obtained with the use of sulfonamide compounds.[22]

Bland and Wilson in Egypt were disappointed by the use of drops of calcium penicillin (500 Oxford units per cubic centimeter) locally in the treatment of 11 patients with gonorrheal ophthalmia. Eight of these were cured in an average of six days, but sulfonamide drugs were resorted to in 3 patients.[23]

Vorisek and Evans reported a drug-sensitization reaction following a second course of penicillin drops (500 and 250 units per cubic centimeter) in the local treatment of a patient with severe gonorrheal ophthalmia. The reaction was characterized by ptosis of the upper eyelid, by thick, red, leathery eyelids and by a slight fissuring of the epithelium of the cutaneous surface.[24]

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[8] Lehrfeld, L.: Limitations of Use of Silver Nitrate in Prevention of Ophthalmia Neonatorum, J. A. M. A. **104:** 1468 (April 27) 1935.

[9] Van Blarcom, C. C.: Am. J. Pub. Health **6:** 926, 1916.

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[11] Sorsby, A.; Hoffa, E. L., and Smellie, E. W.: Brit. M. J. **1:** 323, 1942. Sorsby, A.; Hoffa, E. L., and Young, E. N., ibid. **1:** 353, 1944.

[12] Thompson, J. H.: J. Missouri M. A. **14:** 7, 1917.

[13] Fleming, A.: Brit. J. Exper. Path. **10:** 226, 1929.

[14] Leopold, I. H., and LaMotte, W. O., Jr.: Penetration of Penicillin in Rabbit Eyes with Normal, Inflamed and Abraded Corneas, Arch. Ophth. **33:** 43 (Jan.) 1945.

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[18] Ingalls, R. G.: Am. J. Ophth. **29:** 1152, 1946.

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[21] Seelig, C. A.: U. S. Nav. M. Bull. **44:** 389, 1945.

[22] Lewis, P. M.: Am. J. Ophth. **29:** 694, 1945.

[23] Bland, J. O. W., and Wilson, R. P.: Brit. J. Ophth. **29:** 339, 1945.

[24] Vorisek, E. A., and Evans, A. L.: Am. J. Ophth. **28:** 520, 1945.

Sorsby and Hoffa in 1945 reported the treatment of ophthalmia neonatorum in 47 infants with only the local application of penicillin in the form of drops. Concentrations of 500, 1,000, 1,500 and 2,500 Oxford units per cubic centimeter were used, and the results became more satisfactory as the concentration of penicillin in the drops increased. Twenty-two infants were treated with a concentration of 2,500 Oxford units; there were 21 cures. The causative organism of the therapeutic failure was a diphtheroid. Included in this group of 22 infants were 5 with gonorrheal ophthalmia. Thirteen of the 22 were cured clinically within forty-eight hours, and the remaining 8 within one hundred hours. These authors stated that the drug is well tolerated by the infants' eyes; occasionally a mild transitory flushing of the conjunctivas may be observed.[25]

Sorsby later supplemented the previously reported cases with an additional 38 cases. The results in this series were equally satisfactory except for 2 failures. The causative organisms of these failures were the gonococcus in one and a diphtheroid in the other. The same concentration of penicillin was used as before, but more frequent instillations were made.[26]

These reports indicate that penicillin in therapeutic concentrations is noninjurious to the vital structures of the human eye. They show that penicillin is an effective therapeutic agent in the treatment of gonorrheal ophthalmia. The significant work of Sorsby and Hoffa demonstrates that penicillin in adequate concentration appears to be effective in the treatment of ophthalmia neonatorum when applied locally.

PROPHYLACTIC INSTILLATION OF PENICILLIN

The foregoing facts suggest that penicillin may be an effective prophylactic agent against ophthalmia neonatorum when used in drops and in several respects may be superior to silver nitrate. Penicillin in proper concentration is nonirritating, nonpainful, nondestructive and effective in the treatment of ophthalmia neonatorum.

On the other hand, silver nitrate is temporarily destructive to the conjunctiva, as was first demonstrated by Credé and Hörder.[3] This destruction is observed clinically as a chemical conjunctivitis. That it is painful has been stressed. Silver nitrate deteriorates with time and with exposure to improper containers. But the most important consideration is the danger of permanent injury to the eyes as a result of the accidental use of a too concentrated solution of the silver nitrate.

The present study was undertaken to evaluate clinically the use of penicillin in the form of drops for prophylaxis against ophthalmia neonatorum and to compare it with silver nitrate as commonly used for this purpose.

METHOD

For a four month period (beginning July 1, 1946) penicillin was used for prophylaxis in the eyes of each newborn infant delivered at the John Gaston Hospital, Memphis, Tenn. For comparison silver nitrate was used for a three month period.

The infants were followed in the hospital for evidence of ocular abnormalities and, through the cooperation of the Memphis and Shelby County Health Department, were followed in the home for the first two weeks of life. The eyes of the infants were examined by public health nurses between the fourteenth and seventeenth days of life.

Aerobic, anaerobic and carbon dioxide cultures were run on specimens obtained from the conjunctivas of infants exhibiting pus in their eyes.[27]

SOLUTIONS

Penicillin was used in the form of the crystalline sodium salt of penicillin. A concentration of 2,500 units per cubic centimeter of diluent was used throughout. Sterile isotonic solution of sodium chloride was used as a diluent throughout, except for one and one-half months when sterile distilled water was used. A fresh solution was made as needed but was not kept longer than a week. It was kept refrigerated below 59 F. (15 C.) when not in use.

Silver nitrate was used as a 1 per cent solution in distilled water. A fresh solution was made each day and dispensed from the drug room in a new dropper bottle.

PROCEDURE

Prophylaxis of the eyes of each newborn infant was carried out in the delivery room within one hour of birth, before the infant went to the nursery. The eyelids and adjacent area of the newborn infant were cleansed of contaminating secretions by gently wiping with a large ball of cotton from the inner canthus outward. The eye was closed at the time. Gauze was then used on the fingers for traction to open the eyelids while each eye was flushed thoroughly with 2 or 3 cc. of sterile isotonic solution of sodium chloride (or sterile distilled water when it was the diluent for the penicillin). One drop of penicillin solution was then instilled into the conjunctival sac of each eye.

Instillations were also carried out in the nursery. A single drop of penicillin was instilled daily in each eye of each infant for the first three days of life. The first midnight following the day of birth was considered the beginning of the first day of life. Instillations were made throughout the nursery at approximately the same time each day. Gauze was used on the fingers for traction to open the eyelids of each eye while 1 drop of penicillin was instilled. The hands were washed with soap and water before handling each infant.

PROPHYLACTIC INSTILLATION OF SILVER NITRATE

When silver nitrate was used ocular prophylaxis was carried out in the delivery room in the manner previously described, except that one drop of silver nitrate was instilled instead of penicillin and sterile distilled water was used for flushing the eyes. The infants did not receive any prophylaxis in the nursery.

RESULTS

A total of 1,710 infants (961 infants after the use of penicillin and 749 infants after the use of silver nitrate) were studied in the nursery. All neonatal deaths occurring among infants born in either period were excluded. Twenty (2.1 per cent) of 961 infants exhibited pus in one or both eyes during or after penicillin prophylaxis; 45 (6.0 per cent) of 749 exhibited pus after silver nitrate (table 1).

Approximately half of the 20 infants exhibiting pus after penicillin drops showed grouping of occurrence around the first and second days of life. The occurrence in the other half was sporadic (chart 1). The occurrence of pus in the eyes of 45 infants after the use of silver nitrate showed definite grouping on the day of birth and the first day of life.

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[25] Sorsby, A., and Hoffa, E.: Brit. M. J. 1: 114, 1945.

[26] Sorsby, A.: Brit. M. J. 1: 903, 1945.

[27] A bacteriologic analysis will be treated separately in another article.

Abnormalities other than the presence of pus were noted in each group. Two hundred infants were followed from each group to evaluate the incidence of eyelid swelling, conjunctival redness and watery discharge. The degree of abnormality—slight, moderate or severe—was graded. Abnormalities occurred most frequently on the day of birth. Swelling of the eyelids was noted in 31 per cent of infants after penicillin prophylaxis and in 58 per cent after silver nitrate. Conjunctival redness was seen in 42 per cent after penicillin and in 72 per cent after silver nitrate. Watery discharge was least frequent and occurred in 2 per cent after penicillin and in 10 per cent after silver nitrate. Moderate and pronounced degrees only of these abnormalities are recorded in the foregoing analysis, while slight degrees are not. A slight degree of conjunctival redness or swelling of the eyelids can be produced by the infant's crying. Likewise a moderate degree can be converted to a severe one by crying; thus moderate and appreciable degrees are grouped together.

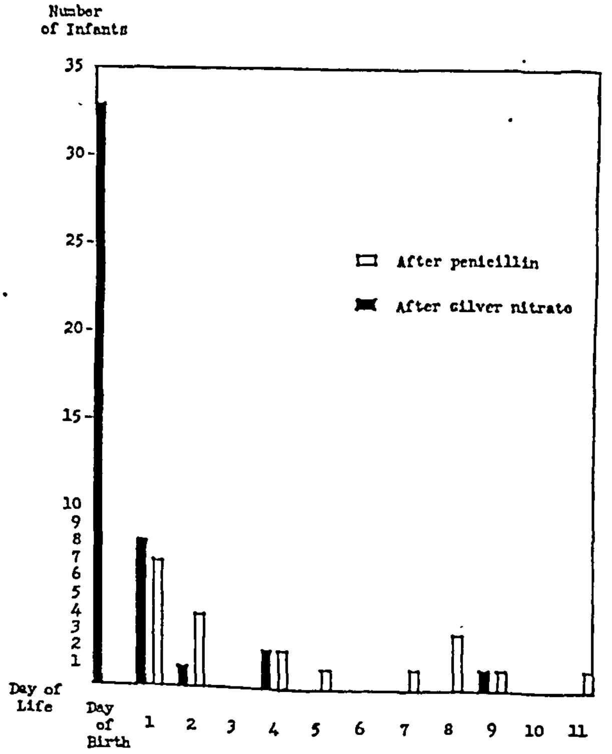

Chart 1.—Day of life when pus was first observed in infant's eyes while in nursery.

Table 1.—*Incidence of Infants Exhibiting Pus in Eyes While in Nursery After Each Method of Prophylaxis*

Method of Prophylaxis	Infants Exhibiting Pus	Total No. of Infants	%
Penicillin	20	961	2.1
Silver nitrate	45	749	6.0

A comparison between the incidence of swelling of the eyelids in relation to the day of life after each type of prophylaxis is made in chart 2. The occurrence of conjunctival redness is compared in chart 3.

The preceding comparison was made when sterile isotonic solution of sodium chloride was used as the diluent for dissolving the penicillin crystals and for irrigation of the eyes in the delivery room. During the time that distilled water was used for both purposes the eyes were not graded in the manner previously described, but no noticeable difference was observed clinically between its use and the use of saline solution. Since the latter causes less discomfort than does distilled water in the adult eye, it is probably to be preferred.

Gonococcic conjunctivitis did not develop in any infant in the group receiving penicillin prophylaxis, but in 1 premature infant in the silver nitrate group it did develop on the fourth day of life. The organism was identified by culture and confirmed by fermentation tests.

Table 2.—*Nurses' Reports from Study of Infants at Home During First Two Weeks of Life*

Condition of Eyes	Penicillin No.	Penicillin %	Silver Nitrate No.	Silver Nitrate %
Normal	672	93.7	479	96.0
Presence of pus	22	3.1	12	2.4
Other abnormalities (redness, swelling or watery discharge)	11	1.5	6	1.2
History of infection of the eyes related by mother	12	1.7	2	0.4
	717	100.0	499	100.0

FOLLOW-UP OBSERVATIONS

Nine hundred and sixty-one infants who received penicillin prophylaxis were discharged to their homes. The public health nurses made follow-up examinations on a total of 771 infants (80.2 per cent). Of these the follow-up of 54 infants could not be completed because they either were not residents of Shelby County or had remained in the hospital through the seventeenth day;

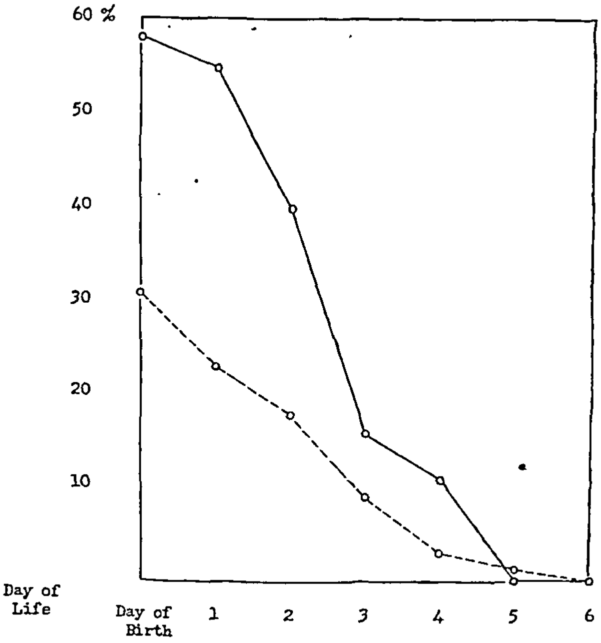

Chart 2.—Incidence of swelling of the eyelids after each method of prophylaxis: broken line, after penicillin; unbroken line, after silver nitrate.

or because of some other reason. Thus, a complete follow-up was made on a total of 717 infants (74.6 per cent).

Seven hundred and forty-nine infants who received silver nitrate prophylaxis were discharged to their homes, and a follow-up was made on a total of 558 infants (74.5 per cent). Of these the follow-up of 59 infants could not be completed for the reasons already mentioned, and thus a complete follow-up was made on a total of 499 infants (66.6 per cent).

After the use of penicillin for prophylaxis 672 infants (93.7 per cent) were normal at the time (fourteenth to seventeenth day) of the public health nurses' examinations (table 2). The mothers of this group stated that no abnormalities of the eyes had been seen after the infant had arrived at home. Pus was found in the eyes of 22 (3.1 per cent) at the time of the examinations. Other abnormalities—conjunctival redness, swelling of the eyelids or a watery discharge—were noted in 11 infants (1.5 per cent) by the visiting nurses. The mothers of 12 infants (1.7 per cent) stated that abnormalities of the eyes occurred prior to the time of examination. These abnormalities had cleared by the fourteenth to seventeenth days.

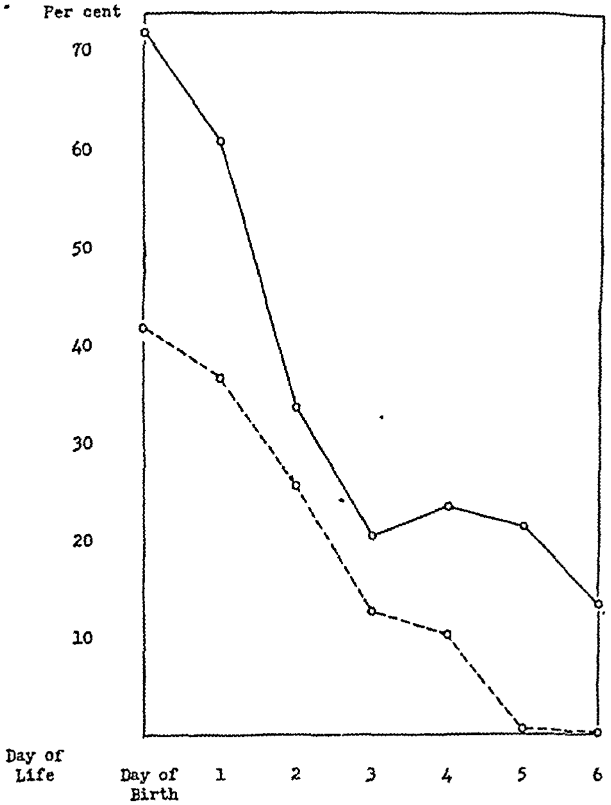

Chart 3.—Incidence of conjunctival redness after each method of prophylaxis: broken line, after penicillin; unbroken line, after silver nitrate.

After silver nitrate was used for prophylaxis 479 infants (96 per cent) were normal at the time of the examination in the home. Of those who exhibited abnormalities, pus was found in the eyes of 12 (2.4 per cent), and other abnormalities were noted in 6 (1.2 per cent). The mothers of 2 infants (0.4 per cent) stated that abnormalities of the eyes had occurred prior to the time of the examination but had cleared by the fourteenth to seventeenth days.

After penicillin prophylaxis, 4 of those who exhibited ocular abnormalities in the home were hospitalized. In 1 there developed an ocular infection on the fifth day of life (hospitalized five days), in 1 on the sixth day (hospitalized four days), in 1 on the eighth day (hospitalized three days) and in 1 on the fourteenth day (hospitalized seven days).

After silver nitrate prophylaxis 2 infants were admitted to the hospital. In 1 infant infection of the eyes developed on the tenth day of life (hospitalized sixteen days—concomitant infection of thrush of mouth), and in the other on the eleventh day (hospitalized four days).

The bacteriologic observations in all 6 infants were negative for the gonococcus.

COMMENT

Crystalline sodium salt of penicillin was used because of its stability. This form of penicillin does not require refrigeration while in the crystalline form. A solution of this form of penicillin retains its potency for at least one week if kept refrigerated below 59 F. (15 C.), provided that the p_H is over 5.5.[28]

In view of the fact that penicillin is not antiseptic but largely bacteriostatic, it was thought that multiple instillations probably would be necessary. Thus, it was decided arbitrarily to use four instillations, as has been mentioned.

That silver nitrate is irritating to the extent of pus formation is confirmed by the fact that a high percentage of infants in the group receiving silver nitrate prophylaxis exhibited pus on the day of birth and the first day of life. Likewise a high percentage of those infants exhibiting other abnormalities at this time was probably due to this irritation.

The cause of conjunctival redness, swelling of the eyelids and watery discharge in the group receiving penicillin was not determined in this study. Since the infant received penicillin prophylaxis through the third day of life, these abnormalities occurred prior to the completion of the prophylaxis. The abnormalities usually subsided before the prophylaxis was completed. Thus, it did not seem likely that possible hypersensitiveness to penicillin was the cause. None of the infants observed presented signs attributable to a drug-sensitization reaction such as those described by Vorisek and Evans.[24]

The actual cause of these ocular abnormalities is open to speculation. Any one of several factors, or a combination of them, might be responsible. Other than a nonsuppurative ocular infection, these factors might be trauma to the eyes by pressure during labor or delivery, irritation from the lubricant used during delivery or exposure to the atmosphere of an eye accustomed to being bathed in amniotic fluid.

It must be remembered that ocular prophylaxis after birth can be expected to protect an infant only from the contaminating secretions of the mother's birth canal. An infant's eyes may become infected by any one who handles the infant, both in the nursery and at home. In carrying out prophylaxis of the eyes cleanliness by washing the hands before handling each infant must be observed to avoid this source of infection and, more important, to avoid the spread of ocular infection from one infant to another. The use of gauze for traction of the eyelids serves a second purpose of preventing the fingers from coming directly in contact with the skin of the eyelids.

The incidence of infection of the eyes may be influenced by the coexistence of another type of infection in the nursery. During the period of penicillin trial there were two outbreaks of infectious diarrhea in the nursery. This was under control during the period of the silver nitrate trial.

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[28] Personal communication from pharmaceutical firm.

A disadvantage of the method of penicillin prophylaxis as compared to that with silver nitrate is the probable need of four instillations instead of one. However, this disadvantage is outweighed by a number of advantages. The advantage of safety and of penicillin's painless instillation have been mentioned. All types of abnormalities of the eyes are less frequent during the first days of life when penicillin rather than silver nitrate is employed for prophylaxis. A solution of silver nitrate must be freshly made each day, but that of penicillin need not be made oftener than once a week. One need not fear that noxious substances will be produced by the deterioration of penicillin as they are by that of silver nitrate. If one suspects serious conjunctival contamination, it is convenient to be employing a prophylactic agent which can be used frequently and in any amount desired. The solution of penicillin may be used not only for prophylaxis but for treatment as well.

SUMMARY AND CONCLUSIONS

Penicillin and silver nitrate are compared in prophylaxis against ophthalmia neonatorum. A total of 1,710 infants were studied clinically in the nursery and in the home during the first two weeks of life. The incidence of the occurrence of pus in the eyes after each method of prophylaxis was determined. A comparison was made of the day of life on which the pus was first observed. The incidence of other abnormalities of the eyes was evaluated. The incidence of gonococcic conjunctivitis was determined. The number of infants hospitalized because of ocular infections that developed during the first two weeks of life was noted.

In the nursery, the occurrence of pus was approximately one third as frequent in the penicillin group as in the silver nitrate group. The occurrence of pus in relation to the day of life was sporadic in approximately half the infants in the penicillin group but showed grouping around the day of birth and first day of life in the silver nitrate group. Other abnormalities—conjunctival redness, swelling of the eyelids and watery discharge—were much less frequent in the penicillin group. In no infant in the penicillin group did gonococcic conjunctivitis develop, but 1 infant in the silver nitrate group did show gonococcic conjunctivitis on the fourth day of life.

While at home a higher percentage of those in the penicillin group exhibited pus and other abnormalities of the eye than of those in the silver nitrate group. Four from the penicillin group and 2 from the silver nitrate group were hospitalized. There were no cases of gonococcic conjunctivitis in either group during the first two weeks at home.

In the study of this series of infants penicillin compares favorably with silver nitrate as a prophylactic agent. Penicillin prophylaxis is to be preferred because danger of permanent injury to the eye is eliminated; an instillation is nonpainful; ocular abnormalities are less frequent during the first days of life; the solution of penicillin need not be made fresh each day; deterioration does not produce noxious substances; an excess of the solution may be used if desired, and the penicillin solution may be used for both prophylaxis and treatment.

Clinical Notes, Suggestions and New Instruments

THE USE OF NEOSTIGMINE METHYLSULFATE IN INFECTIOUS NEURONITIS

Report of a Case with Involvement of Respiratory Muscles

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The use of neostigmine has been advocated in the treatment of poliomyelitis[1] and other neuromuscular disturbances.[2] Whereas clinical results with this and similar drugs are equivocal in poliomyelitis,[3] encouraging results have been reported in the treatment of a case of neuronitis.[4] The present report concerns a case of infectious neuronitis in which neostigmine effected subjective and objective improvement during a critical period of respiratory difficulty.

REPORT OF CASE

C. V., a white boy aged 10, was admitted to St. Louis Children's Hospital on June 8, 1946. He had been well until two weeks prior to admission when he suffered an illness characterized by fever, malaise, lesions in the mouth and a maculopapular rash which began on the face. The disease was diagnosed as measles by the family physician. Measles was prevalent in the community at the time. Apparently the boy's recovery from this acute illness was complete. However, nine days after its onset, i. e., five days prior to admission, he began to complain of headache and of weakness in the legs. After about forty-eight hours the headache subsided, but nausea and vomiting followed. At this time weakness in both legs was associated with pain in the hamstrings, and there was stiffness of the back and the neck. He was observed to walk with a staggering gait. On the night before admission to the hospital he experienced difficulty in initiating urination. The remainder of the history was noncontributory. The child had been immunized against smallpox, diphtheria and tetanus.

On admission, physical examination revealed a well developed and well nourished boy. Slight ptosis of the eyelids was noted; otherwise the cranial nerves were intact. There was slight stiffness of the neck, and pain was elicited on flexion, but no definite rigidity was demonstrated. All deep reflexes in the lower extremities were absent, as was the right upper abdominal reflex. Reflexes in the upper extremities were equal and active. No response was obtained through plantar stimulation. No impairment of sensation was detected on careful examination. The finger to nose test was well performed with the eyes open

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[1] (*a*) Boines, G. J.: The Use of Prostigmine and a Modified Kenny Technique in the Treatment of Poliomyelitis, J. Pediat. **25:** 414-438 (Nov.) 1944. (*b*) Brainerd, H.; Katz, H. J.; Rowe, A. P., Jr., and Geiger, J. C.: The Clinical Manifestations of Poliomyelitis: Treatment with Neostigmine and Kenny Method, J. A. M. A. **128:** 718-719 (July 7) 1945. (*c*) Kabat, H., and Knapp, M. E.: The Use of Prostigmine in the Treatment of Poliomyelitis, ibid. **122:** 989-995 (Aug. 7) 1943; The Mechanism of Muscle Spasm in Poliomyelitis, J. Pediat. **24:** 123-137 (Feb.) 1944.

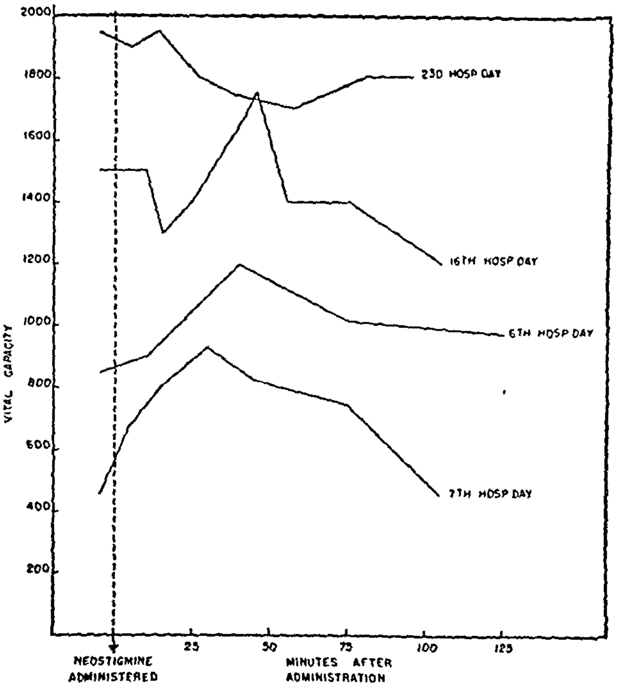
[2] (*a*) Kabat, H.: Studies on Neuromuscular Dysfunction: Neostigmine Therapy of Neuromuscular Dysfunction Resulting from Trauma; Neostigmine Therapy of Hemiplegia, Facial Paralysis and Cerebral Palsy; Neostigmine Therapy of Chronic Rheumatoid Arthritis and Subacromial Bursitis, Pub. Health Rep. **59:** 1635-1650 (Dec. 22) 1944. (*b*) Kremer, M.: Action of Intrathecally Injected Prostigmine, Acetylcholine and Eserine on the Central Nervous System in Man, Quart. J. Exper. Physiol. **31:** 337-357 (July) 1942. (*c*) Trommer, P. R., and Cohen, A.: Use of Neostigmine in Treatment of Muscle Spasm in Rheumatoid Arthritis and Associated Conditions, J. A. M. A. **124:** 1237-1239 (April 29) 1944. (*d*) Ward, A. A., Jr., and Kennard, M. A.: Effect of Cholinergic Drugs on Recovery of Function Following Lesions of the Central Nervous System in Monkeys, Yale J. Biol. & Med. **15:** 189-228 (Dec.) 1942. (*c*) Wolf, A.: A Method for Shortening the Duration of Lower Motor Neurone Paralysis by Cholinergic Facilitation, J. Nerv. & Ment. Dis. **92:** 614-622 (Nov.) 1940.

[3] (*a*) Fox, M. J., and Spankus, W. H.: The Value of Neostigmine in Acute Anterior Poliomyelitis, J. A. M. A. **128:** 720-722 (July 7) 1945. (*b*) Watkins, A. L., and Brazier, M. A. B.: Observations on Muscle Spasm in Poliomyelitis: [illegible] the Effect of Various Forms of Thermal [illegible] ch. Phys. Med. **26:** 325-328 (June) 1945; [illegible] 1945.

[4] Shaffer, J. O.: The Use of Neostigmine in the Treatment of the Guillain-Barré Syndrome, J. A. M. A. **131:** 285-286 (May 25) 1946.

but only fairly well performed with the eyes closed. The heel to knee test was poorly performed bilaterally. Muscle tone was extremely poor in the hamstrings, the gastrocnemius and the soleus muscles of both extremities. On forced extension of the hamstrings, the patient complained of pain in the tendons. The muscles of the back were quite stiff, and the patient was not able to walk without support. Cerebrospinal fluid obtained on admission showed 1 cell per cubic millimeter, and the Pandy test was positive; the chloride content was 730 mg. and the protein level was 110 mg., per hundred cubic centimeters. Urinalysis revealed nothing abnormal. Study of the blood showed 14.5 Gm. hemoglobin, 10,000 white cells, with 67 segmented, 30 lymphocytes, 2 monocytes and 1 eosinophil, and adequate platelets. A diagnosis of infectious polyneuritis (neuronitis) was made.

The patient's condition was satisfactory until the fourth hospital day, at which time striking changes in the neurologic picture were observed. Cranial nerve examination now revealed the following: a slight blurring of vision but no decided impairment of extraocular movements; weakness and pain in masseter muscles; moderate facial weakness more pronounced on the right side; an increase in ptosis; palatal weakness and impairment in swallowing; partial paralysis of vocal cords; weakness of the sternocleidomastoids, and slow protrusion of the tongue with a fine tremor. Biceps jerks had become much less vigorous than on admission; the abdominal reflexes were difficult to elicit, and the reflexes in the lower extremities remained absent. The patient complained of paresthesia in the lower extremities and to some degree in the upper extremities. Vibratory sense (256) was absent in the lower but present in the upper extremities, and position sense was lost in the lower extremities. The flaccid paralysis which had been noted on admission was more pronounced. The patient was just able to raise his arms and legs from the bed. Weakness in the muscles of respiration was noted.



Effect of neostigmine methylsulfate on vital capacity. (The calculated normal vital capacity is 1,900 cc.)

Because of the rapid development of these adverse findings, a trial dose of neostigmine was deemed advisable, and 1 cc. of a 1:2,000 dilution of neostigmine methylsulfate was administered subcutaneously. Within forty minutes after the administration of the drug a definite change in the patient's condition was noted. He was able to raise both arms from the bed and to extend them. His speech and deglutition were strikingly improved. Although his legs were still weak, he could flex the knees and dorsiflex both feet. In view of this improvement, the administration of neostigmine was continued at regular three hour intervals. Within forty to forty-five minutes after each administration of drug, well defined improvement in voice and respiration was noted.

In order to obtain objective evidence and evaluate the apparent improvement in respiratory efficiency subsequent to the use of neostigmine, studies of the vital capacity were undertaken on the sixth hospital day. By means of a cylindrical spirometer, the vital capacity at rest was recorded as 850 cc. Immediately after this reading was made, 1 cc. of a 1:2,000 solution of neostigmine methylsulfate was administered subcutaneously, and at regular intervals thereafter determinations of the vital capacity were made. (See the accompanying chart.) A maximum increase was observed forty minutes after the administration of the drug, when the vital capacity was 1,200 cc. Within seventy-five minutes after giving the drug, it had fallen to 1,020 cc., and within 125 minutes it had returned to 975 cc. The patient was able to breathe more comfortably during the period of increased vital capacity, and the mild cyanosis tended to disappear. Also, as noted previously, muscular function was improved. Extension of the arms, which before the administration of the drug could be executed only after several jerking movements, was now accomplished smoothly. Appreciable relief from the painful spasm of the shoulder girdle and back lasted for a period of one-half hour to one hour.

Despite therapy, however, the patient became progressively worse during the next twenty-four hours. The effectiveness of neostigmine for relief of muscular spasm and for increase in vital capacity was reduced decidedly. Now the administration of neostigmine increased the vital capacity from a resting level of 450 cc. to a maximum of 930 cc. thirty minutes after the administration of the drug. The return to resting level occurred within an hour and forty-five minutes. At this time (seventh hospital day) studies made of the power of finger muscles likewise indicated maximum effect of the drug at thirty minutes. Thirty minutes after the drug was administered the work capacity of the right index finger against constant weight was doubled.

In the hope of obtaining some information as to the site of action of neostigmine, action currents from a flexor of the forearm in response to electrical shocks to the ulnar nerve were recorded before and after the usual dose of neostigmine on the eighth hospital day. With supramaximal shocks the amplitude of the potential was not increased by the drug. While this does not demonstrate that normal power of the muscle was present in either case, it does indicate that any improvement in power under this drug was not due to an effect on the nerve-muscle junction and was presumably, therefore, an action of the central nervous system. Records of the flexors and extensors of the wrist in voluntary movement seemed to indicate that the tendency of flexors to respond during extension, and of extensors during flexion, was decreased under neostigmine. Such a finding is, however, not conclusive since opposing muscles may be involved normally in controlling the movement of the wrist. In addition relaxation of emotional tension as the subject became accustomed to an unusual procedure may have contributed to the result.[5]

On the ninth hospital day the patient's respiratory distress was more pronounced, due in part to the aspiration of a small quantity of water. Resort to the Drinker respirator was necessary. In view of the information gained from the studies of vital capacity and the obvious relief of spasticity and muscular pain, the administration of neostigmine was continued at maximum dosage of 1 cc. of a 1:2,000 dilution given subcutaneously every two hours, even during the period when the patient was in the respirator. At this time the patient complained of some abdominal pain, but there was no increase in salivation. Atropine (1/150 grain, 0.4 mg.) was given once to counteract abdominal pain.

During the next four days, which were spent in the respirator, weakness of the muscles was extreme. However, at the end of this time the patient began to improve in all respects. On the thirteenth hospital day it was possible for him to remain out of the respirator all day. The administration of neostigmine was necessary only every three hours. Phonation had improved greatly; swallowing was accomplished with less difficulty; ptosis and facial paresis were less definite. All deep reflexes in both upper and lower extremities were still absent except for the left biceps jerk which was present inconstantly. Superficial reflexes were absent. The position sense in the lower extremities was impaired, and the patient complained of paresthesia in all extremities. The remainder of the sensory examination revealed normal conditions. After the thirteenth hospital day steady progress toward recovery was made. On the sixteenth hospital day further studies on vital capacity were attempted. The resting vital capacity at this time was recorded as 1,500 cc. A maximum rise to 1,750 cc. was observed fifty-five minutes after the administration of neostigmine. In view of this minimal response, the administration of the drug was discontinued on the seventeenth hospital day. At this time the electrical tests on the muscles which had been used on the previous occasion were repeated and the findings compared with those obtained for corresponding muscles of a normal child. In neither case was any effect of neostigmine noted—either on the response to electrical stimulation of the muscles or on voluntary motion to any significant degree.

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[5] Electromyography was done by Dr. George H. Bishop in the Department of Neurophysiology, Washington University School of Medicine.

Effect of Neostigmine Methylsulfate on Normal Controls

	Vital Capacity (in Cc.)		Vital Capacity (in Cc.), Min. After Neostigmine						
Subject	Calculated	Actual	5	15	30	40	60	80	100
J. F.	2,400	2,800	2,800	2,750	2,700	2,700	2,720	2,750	2,650
A. B.	2,400	2,600	2,350	2,400	2,300	2,250	2,400	2,600	2,400
D. C.	2,100	1,800	1,850	1,750	1,800	1,800	1,800	1,720	1,750

Muscular strength and reflexes returned gradually. On the eighteenth hospital day spinal puncture revealed clear fluid that contained 1 lymphocyte per cubic millimeter and had a protein level of 415 mg. per hundred cubic centimeters. On the twenty-second day a trial dose of neostigmine methylsulfate was administered in an attempt to determine its effect on the tremor of the hands and on a mild spasm of the sacrospinalis muscle which were still present. No effect on either was noted. Repeated vital capicity readings on the twenty-third hospital day gave an average resting level of 1,950 cc. The vital capacity did not change within two hours after the administration of 1 cc. of a 1 : 2,000 dilution of neostigmine. Improvement continued, and the patient was discharged on the twenty-ninth hospital day. Follow-up examinations indicated gradual, steady return of muscle power, so that at thirty days after discharge all deep reflexes were present. No involvement of the cranial nerves was observed. Except for slight difficulty on running, the gait was normal. Two months after discharge no abnormalities whatsoever could be elicited.

COMMENT

The administration of neostigmine methylsulfate to a patient during the acute phase of infectious neuronitis resulted in remarkable subjective and objective improvement. Within thirty to forty-five minutes after the subcutaneous administration of the drug there was notable change in phonation and deglutition, relief from pain due to muscular spasm, greater ease of movement of the upper and lower extremities and an increase in vital capacity. In the acute phase of the disease, the response to neostigmine was progressively less both with respect to duration and to overall effect. In the latter part of the period of recovery, no effect due to neostigmine could be demonstrated.

The apparent improvement in the strength of the muscles might be interpreted as due to a decrease in spasticity of the antagonists rather than to an increase in the strength of the agonists. It is suggested that a reduction in hyperactivity had occurred at cord or higher levels due perhaps to an effect of neostigmine on the central nervous system. Kabat and Knapp [1c] who have made similar observations in subjects whose muscular spasm resulted from lesions of internuncial neurons have attributed this effect to an inhibition of proprioceptive reflex activity. A similar effect of cholinergic drugs on hemiplegias and other spastic conditions was described earlier by a number of French workers, quoted by Ward and Kennard,[2d] and has been investigated more recently by Kremer [2b] who demonstrated a depression of deep reflexes and a lessening of spasticity in patients with lesions of the pyramidal tract to whom neostigmine was administered intrathecally. Ward and Kennard [2d] have shown that monkeys to which cholinergic drugs were administered after unilateral ablation of areas 4 and 6 of the cerebral cortex recovered muscular function more rapidly and more completely than did control animals after the same operation. From a preliminary survey of a number of conditions which have muscular spasm in common, e. g., hemiplegia, cerebral infarctions and rheumatoid arthritis, Kabat [2a] concluded that the majority of patients improved remarkably after the administration of neostigmine. According to Kabat the improvement consisted not only in relief of spasm and pain but also in increase of the range of motion. Relief of the spasm in rheumatoid arthritis by means of this drug has been described by Trommer and Cohen.[2c]

Increase in vital capacity and relief of respiratory distress in this patient after the administration of neostigmine methylsulfate are less easily explained on the basis of lessened antagonist spasticity. However, spasticity of the muscles of the neck and back in general and of the accessory muscles of respiration in particular may have contributed to the respiratory difficulty. If so, relief of such spasm effected by neostigmine might account for the increase in vital capacity noted after the use of the drug. It is of interest that the effect of the drug disappeared as the vital capacity of the patient returned to the normal level for his calculated surface area. In similar experiments on normal patients of approximately the same age and size, no increase of vital capacity was observed after the administration of neostigmine (table 1).

CONCLUSION

Evidence is presented which indicates that neostigmine methylsulfate administered subcutaneously to a 10 year old boy suffering from infectious neuronitis was effective in increasing the vital capacity and in tiding the patient over a critical period of respiratory difficulty. It seems possible that in such cases increased vital capacity induced by the drug might obviate the necessity for the respirator. In this patient relief of pain subsequent to injection of the drug was noteworthy. Increase in muscular power and improvement in phonation and deglutition during the early stages of the disease were definite and reproducible. Later in the course of the disease these effects were less striking in character and more transitory. The suggestion is offered that the increased muscular and respiratory efficiency observed in this patient subsequent to the administration of neostigmine methylsulfate may have been brought about by relief of spasm of antagonistic muscles.

DISSEMINATED CHICKENPOX (PNEUMONIA AND NEPHRITIS)

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The radiologist is usually confronted with several possibilities in the interpretation of roentgenograms of the chest in the presence of pathologic changes. The interpretation is increasingly dependent on associated clinical and laboratory data. The addition of cases with more detailed studies assists in the possibility of better differentiation of pathologic entities.

With the further recognition of various virus infections involving the lungs and their differentiation by serologic methods, there is greater assurance that the process is actually the result of the viral agent and not merely a concomitant or superimposed bacterial infection. The advent of more effective bactericides which are used, at times, as a therapeutic test against possible pathogenic bacteria enhances the assurance of virus etiology alone.

Among the virus diseases less frequently revealing pulmonary manifestations are those that affect the skin and mucous membranes primarily. Pneumonia, however, is not infrequently seen in measles and has been reported in smallpox contacts.[1] Disseminated chickenpox with pulmonary and renal lesions has been

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[1] Howat, H. T., and Arnott, W. M.: Outbreak of Pneumonia in Smallpox Contacts, Lancet 2: 312 (Sept. 2) 1944.

recognized. Bullowa and Wishik[2] observed pneumonia in 0.8 per cent and nephritis in 0.1 per cent of 2,534 cases, with, however, pathogenic bacteria also present and thought to be the complicating agent. Gill[3] in a review of the literature showed nephritis as a complication in varying percentage, roughly 0.1 to 0.5 per cent with an interval of one to twenty-four days between the eruption and the onset of nephritis. Waring, Neubuerger, and Geever[4] reported some details of 8 cases in which the histologic appearance was considered as not being characteristic of the virus type of pneumonia. They reported 1 case complicated with pneumonia and a second fatal case with lobar pneumonia, encephalitis and nephrosis. Pathogenic bacteria were associated with the disease in both these cases, although Waring and his associates believed that the histologic observations in the fatal case were those of a virus type of infection. Rausch, Grable and Musser[5] reported a case of chickenpox in an adult with pneumonia. They considered that this was probably due to chickenpox, but there was apparent response of the fever to sulfathiazole therapy. The absence of leukocytosis was a factor in their consideration.

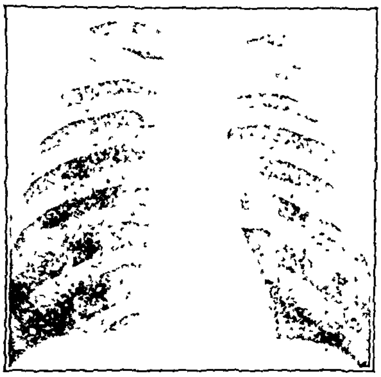

Fig. 1.—A few scattered, small, scarcely visible densities revealed by roentgenogram of chest on entry.

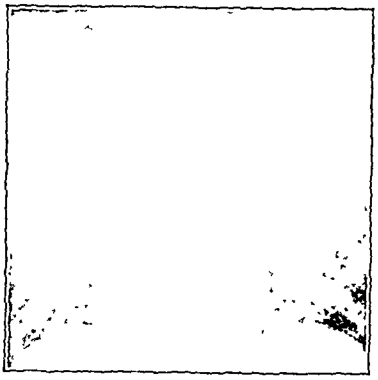

Fig. 2.—Pronounced increase in the pulmonary density in the perihilar and midlung areas; slight cardiac enlargement.

REPORT OF A CASE

The report of a case in which no evidence of bacterial infection was obtained is as follows:

History.—A white man aged 34, an American seaman, entered the isolation division of San Francisco Hospital for the first time on April 14, 1946. His complaints were fever of four days' duration with a rash for two days. The present illness began four days before entry when the patient noticed general malaise and fever followed by a few chills. After two days he lost his appetite, and a rash began to develop over his chest, arms, face and neck. A nonproductive cough developed one day later. His family history was noncontributory. He denied any association with tuberculosis. His past illnesses included measles, whooping cough and typhoid fever with pneumonia in 1923.

Physical Examination.—On entry examination revealed a well developed man who was not in acute distress. The temperature was 103 F., the pulse rate 85 and the respiratory rate 24. The skin showed a pleomorphic maculopapular and vesicopapular rash on the trunk, face and neck, and there were a few lesions on the arms and thighs. The lesions varied from macules 1 to 5 mm. in diameter to papules and vesicles of 2 to 5 mm. in diameter. Some older lesions were crusted and healing. They were surrounded by a red areola. The eyes showed a mild degree of conjunctivitis and there was an acute type of rhinitis with some dicharge. No Koplik's spots were visible, but there were some pleomorphic lesions in the mouth, as described previously. The lungs were clear to auscultation and percussion, although the patient coughed constantly throughout the examination. The abdomen and genitalia were not remarkable. The reflexes were physiologic.

A roentgenogram of the chest on entry revealed a few scattered, small, scarcely visible densities (fig. 1).

Laboratory Findings.—The Wassermann test of the blood was negative. On April 15, 1946 the icteric index was 12.6, the Takata-Ara reaction was negative. The level of total serum proteins was 5.0 Gm., with albumin 3.4 Gm. and globulin 1.6 Gm., per hundred cubic centimeters.

Four cultures of blood taken over a period of one month showed no growth of organisms.

Examinations of sputums were negative, except for normal flora in the respiratory tract. Pneumococci or hemolytic streptococci were not found.

Test for cold agglutinins on April 18, April 25 and May 2, 1946 were negative in all dilutions.

The determination of serum proteins on May 23, 1946 gave 5.73 Gm. total, with albumin 3.05 Gm. and globulin 2.68 Gm., per hundred cubic centimeters.

The blood urea level on May 23 was 24 mg. per hundred cubic centimeters.

Serum tests for psittacosis antigen by complement fixation test gave a negative reaction. Agglutination reactions were negative for typhoid, paratyphoid A and B and undulant fever antigens.

Course.—On the second hospital day of the patient marked conjunctivitis developed, and the dry cough noted on entry became severer. The lungs were resonant to percussion throughout, with fine crackling rales at the right base posteriorly. He was given an initial dose of 4 Gm. sulfadiazine, followed by 1 Gm. every four hours for four days. During this period the pulmonary signs became more pronounced and the patient remained febrile. On the fourth hospital day wheezes and rales were heard over the entire chest. The patient became extremely cyanotic and dyspneic. Theophylline ethylenediamine (0.5 Gm.) was given intravenously, without noticeable relief.

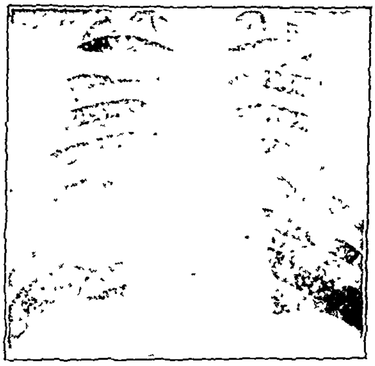

Fig. 3.—Partial clearing of the pulmonary densities.

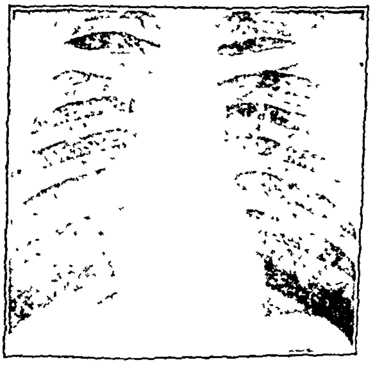

Fig. 4.—Decided regression of the pulmonary densities.

There were visible in the roentgenogram of the chest taken at this time diffuse, finely nodular infiltrations throughout both lung fields. These were more definite in the midportions and particularly about the hilar regions. The perihilar density was suggestive of pulmonary edema. Some increase in the size of the cardiac shadow was observed (fig. 2). The patient was placed in an oxygen tent for several days, which afforded him great relief, and was given 20,000 units of penicillin every three hours for five and one-half days, but his temperature remained elevated. On the eleventh hospital day he became subjectively well. The lesions of the skin were almost entirely healed. The lungs seemed clear by auscultation and percussion. On the thirteenth hospital day the mottled densities seen on the roentgenograms of the chest were still present, although less pronounced and slightly reticular in appearance. The slight cardiac enlargement persisted (fig. 3). On the same day the patient's temperature rose to 102 F., and he remained febrile for seven days more. Blood cultures made during this time were negative. Chest roentgenograms on the twenty-seventh hospital day revealed still further clearing of the pulmonary densities (fig. 4). On the twenty-eighth hospital day urinalysis revealed albumin (2 plus) and an occasional erythrocyte, although the patient seemed clinically well. He was discharged to private care and was not available for further follow-up.

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[2] Bullowa, J. G. M., and Wishik, S. M.: Complications of Varicella: Their Occurrence Among 2,534 Patients, Am. J. Dis. Child. **49:** 923-926 (April) 1935. Wishik, S. M., and Bullowa, J. G. M.: Complications of Varicella: Surface Complications, ibid. **49:** 927-932 (April) 1935.

[3] Gill, D.: Nephritis as Complication of Varicella, Arch. Pediat. **59:** 587-593 (Sept.) 1942.

[4] Waring, J. J.; Neubuerger, K. T., and Geever, E. F.: Severe Forms of Chickenpox in Adults with Autopsy Observations in Case with Associated Pneumonia and Encephalitis, Arch. Int. Med. **69:** 384-408 (March) 1942.

[5] Rausch, L. E.; Grable, T. J., and Musser, J. H.: Atypical Pneumonia Complicating Severe Varicella in Adult, New Orleans M. & S. J. **96:** 271-275 (Dec.) 1943.

Tables 1 and 2 show the course of cellular elements in the blood. It is of interest to note that, at the height of his pneumonia, the patient had a leukopenia with no increase in neutrophils but, rather, an increase in lymphocytes.

A roentgenogram of the chest on discharge revealed almost complete clearing of the lung fields and return of the cardiac shadow to its original configuration.

TABLE 1.—*Data on Blood*

Date	Hemoglobin (Sahli)	White Blood Cells	Polymorphonuclears	Eosinophils	Monocytes	Lymphocytes	Packed Cell Volume	Corrected Sedimentation Rate *
4/14/46	98%	4,000	84% (76/8)	0	0	16%		
4/17/46	92%	7,600	76% (64/12)	0	0	24%		
4/26/46	84%	6,400	64% (58/6)	3%	1%	32%		
4/30/46	....	7,400	65% (62/3)	0	0	35%	33	4
5/ 7/46	98%	11,400	76% (72/4)	2%	4%	18%		
5/11/46	....	8,400	66% (54/12)	2%	5%	27%		
5/14/46	....	.....	....	...	...	...	39	36
5/23/46	86%	8,600	66% (64/2)	2%	4%	28%		

* Wintrobe.

TABLE 2.—*Data on Urinalyses*

Date	Color and Amount	Specific Gravity	Reaction	Albumin	Sugar	Acetone	Sediment
4/15/46 (voided)	Amber	1.022	5.5	None	None	None	Granular casts, a few; hyaline casts a few; WBC, 6-8/hpf; RBC, none
5/10/46 (voided)	Yellow	1.004	...	++	None	None	WBC, 2-4/hpf; RBC, 1/hpf; casts, none
5/21/46 (Addis count)	Yellow 1,030 cc./ 24 hrs.	1.024	5 8	2.1 Gm / 24 hrs.	None	None	(Amount in 24 hrs.) casts = 900,000 (600,000 hyaline, 300,000 granular); RBC, 34 million; WBC, 7 million

COMMENT

The chronologic association of roentgenograms of the chest with laboratory tests and with clinical signs and symptoms was made purposefully. Only minimal pulmonary densities were seen at first, despite symptoms. These persisted long after the signs and symptoms had disappeared. The degree of the pulmonary involvement coincided with the course of cutaneous manifestations. The diffuse patchy involvement shown and described in the literature was noted.[6] The increase in the size of the heart was also shown, with its return to the original size on regression of the pulmonary changes.

On the twenty-eighth hospital day there appeared clinical evidence of nephritis, which was not present before and which had been looked for during and shortly after the sulfadiazine therapy. Hematuria and albuminuria persisted thereafter and remained about the same. Excretory urography was done once and did not show any morphologic or functional abnormality.

Response to sulfadiazine or penicillin therapy by clinical improvement or lowering of temperature was lacking. There was later improvement in this regard without either of these therapeutic agents. No pathogenic bacteria could be recovered from the blood or from samples of sputum. These observations certainly do not favor belief in the presence of a concomitant or secondary bacterial infection. Bacterial infection in already diseased tissues was probably prevented by the use of sulfadiazine and penicillin. Reactions to agglutination tests helped to rule out at least one of the more frequent and one of the less frequent forms of virus pneumonia. Lack of facilities prevented the determination of antistreptolysin titer. All the changes observed were probably due to the chickenpox.

SUMMARY

A case of disseminated chickenpox with recovery is reported. Pneumonia and nephritis were present without any demonstrable pathogenic bacteria in the upper part of the respiratory tract or in the circulating blood.

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[6] Waring, Neubuerger and Geever.[4] Rausch, Grable and Musser.[5]

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, *Secretary.*

TRIBUTE TO THE MEMORY OF DR. EBEN J. CAREY

The Council on Physical Medicine of the American Medical Association records with deep sorrow the death of

Eben James Carey

When death came to Eben James Carey on the morning of June 5, 1947, the Council lost one of its most active and helpful members, and American medicine one of its respected teachers and research workers. Death was caused by acute infectious hepatitis.

Dr. Carey was born in Chicago on July 31, 1889. He was graduated from Rush Medical College, Chicago, in 1925 and served an internship at the Presbyterian Hospital in that city. He received the bachelor of science, master of science and doctor of science degrees from Creighton University in Omaha, where he taught for six years before coming to Marquette University in 1920. While at Marquette he was dean of medical students from 1921 to 1928, medical director of the Free Dispensary from 1924 to 1928 and chief of staff of the University Hospital from 1926 to 1928.

He was a fellow of the American Association for the Advancement of Science and the New York Academy of Medicine, a member of the Milwaukee Academy of Medicine, serving as its president in 1939 and 1940, Chicago Institute of Medicine, the American Association of Anatomists and formerly vice president of the Association of American Medical Colleges.

The Radiological Society of North America awarded him a gold medal in 1933 in recognition of his x-ray study of bone growth. He was chairman of the program committee of the Council on Scientific Work of the State Medical Society of Wisconsin, which in 1938 presented him with the Council award.

One of Dr. Carey's especial interests was the dissemination of scientific health information to the public; his work in this field was based on the conviction that museum exhibits can be interesting and practical without sacrificing accuracy. The success of the displays in the Hall of Science at Chicago's Century of Progress was largely due to the enthusiasm with which he planned the medical portions of the work and the eagerness with which he visited institutions, especially in Europe, in search of suggestions. His ability to rouse popular interest enabled him to advance the cause of physical medicine in Wisconsin perhaps more than any other individual there.

As a member of the Council on Physical Medicine he was able to make special contributions because of his interest in body mechanics, the details of kinesiology and especially the minutiae of the function of the vertebral column. In the last months of his life he was actively interested in interpreting the significance of atomic energy to the medicine of the future; he contributed a well considered report on that subject at the meeting of a committee of the Council on Dec. 12, 1946.

Members will miss Dr. Carey for the buoyant, cheerful effectiveness with which he went to work on the various problems of the Council.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 9, 1947

PROPAGANDA ACTIVITIES OF GOVERNMENT AGENCIES

In a report[1] to the House of Representatives it is charged that certain government agencies are using public funds in an improper manner for propaganda activities in support of a program of national compulsory health insurance. The agencies listed are the U. S. Public Health Service, Children's Bureau, Office of Education, U. S. Employment Service, Department of Agriculture and the Bureau of Research and Statistics of the Social Security Board.

On Dec. 10, 1945 the Surgeon General of the Public Health Service, Dr. Thomas Parran, wrote to all field men and staff operators of the Public Health Service throughout the country referring to the President's message to Congress, which urged enactment of a national health program. In this letter[2] Dr. Parran said "Every officer of the Public Health Service will wish to familiarize himself with the President's message and will be guided by its provision when making any public statement likely to be interpreted as representing the official views of the Public Health Service." Pursuant to this policy, according to the report, the public health service planned a series of conferences and "health workshops," so called, to be held in various states. It appears that full time government employees were sent, for a purpose, on these trips and that their traveling expenses cost the taxpayers nearly $5,000. This, the House committee found, was an unlawful use of federal funds, and the matter has been referred to the Department of Justice.

The "health workshop" held at Jamestown, N. D., Sept. 27-30, 1946 was attended by eighteen government employees who were away from their desks for a total of 126 man days. The chairman of this conference was Mayhew Derryberry, Ph.D., of the Public Health Service. The conference held at the University of Chicago to plan the propaganda campaign was attended by nine government employees and eleven representatives of labor organizations and the Farmer's Union. The "health workshop," held at St. Paul, was attended by eighty persons, including fifteen government employees. The leaders or "training officers" at the "health workshops" used instruction sheets on which the following topics were listed: (1) formation of pressure groups, (2) technics for the organization of citizen groups and (3) methods of bringing about group actions. The Public Health Service distributed to the invited delegates pamphlets in support of socialized medicine, published by government bureaus, the C. I. O., the A. F. of L. and the Physicians Forum, the latter said to be a propaganda agency for the Wagner-Murray-Dingell bill. The delegates thus indoctrinated were then given tests to determine their ability for leadership. It was interesting, a witness said, to note that when left to themselves the delegates were unable to think of any particular health problems in his state.

The House committee found that most of this literature, as distributed by the C. I. O., the A. F. of L., the Farmer's Union and the Physicians Forum originated in the Bureau of Research and Statistics of the Social Security Board, with which Mr. Isadore Falk is closely associated. Indeed, a member of his staff, Miss Margaret Klem, is said to have helped draft the Wagner-Murray-Dingell bill.

The testimony of Dr. Herman Hilleboe, then Assistant Surgeon General and now health officer of the state of New York, according to the committee report, reflected the spirit which dominates officials of the Public Health Service in the campaign to high pressure this legislation through Congress. Dr. Hilleboe was asked whether the literature prepared by the federal agencies discussed both sides of the question or was limited to material supporting President Truman's desire for a national health program. Dr. Hilleboe replied "We would naturally give emphasis to that, because that is why we are in government. Otherwise, we should get out of government." An attitude of intolerance toward honest discussion of the issue was shown also by another witness, Mr. Harry J. Becker of the Children's Bureau, who made speeches throughout the country in advocacy of the President's national health program. Mr. Becker was asked "Did you give both sides of the question of compulsory health insurance when you gave your discussions?" Mr. Becker replied "I don't know what you mean by both sides." His testimony before the House committee, it is said, typically disclosed how funds appropriated by Congress are diverted to propaganda favoring socialized medicine. The committee has evidence that the Bureau of Research and Statistics in the Social Security Board, of which Mr. Isadore Falk is the director, maintains close contact with movements for compulsory health insurance in other countries. Only last May Mr. Falk requested that Jacob Fisher, one of Mr. Falk's assistants, be sent to New Zealand at government expense to study compulsory health insurance programs. Jacob Fisher, by the way, is well known by the House Committee on Un-American Activities, and the committee expects later to present to Congress a detailed record of his activities.

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[1] Third Intermediate Report of the Committee on Expenditures in the Executive Departments, House Report 786 of the First Session, 80th Congress, submitted July 2, 1947 to the Committee of the Whole House on the State of the Union.

[2] The Journal, Jan. 12, 1946, p. 84.

In the meantime the intermediate report of the House Committee on Expenditures in the Executive Departments is a sad reflection on the U. S. Public Health Service and some other government agencies involved. It should be emphasized that a public health service that is authorized to administer millions of dollars of public funds to carry on scientific medical research and that is constantly expanding its activities to reach the lives of more and more of our people should be kept free from such activities as are disclosed in this report. That is what this country expects of its Public Health Service.

ANURIA OF THERMAL BURNS

Hemoglobinuria is an early complication of severe burns; it results from the rapid destruction of red cells; hemoglobinemia is associated with consequent excretion of free hemoglobin in the urine. Shen and his co-workers[1] found gross hemoglobinuria in 9 patients and minimal hemoglobinuria in 2 among 40 patients of the Cocoanut Grove fire who had second and third degree thermal burns involving 15 to 65 per cent of the body area. Damaged renal function, according to Olson and Necheles,[2] is similar to that following hemolysis from incompatible blood transfusion, blackwater fever and other hemolytic diseases. The common factor in all these cases was intravascular hemolysis due to the sudden and rapid destruction of red cells or muscle cells. Ross[3] stresses that the escape of large quantities of hemoglobin from erythrocytes into the plasma is almost invariably followed by grave symptoms and frequently by death.

Olson and Necheles conducted animal experiments to determine the relative effectiveness of present methods of relief in burn anurias. Following experimental thermal burns, the abdomens of the animals were opened and each ureter was cannulated and connected to a sensitive drop recorder and counter which registered on a kymograph the urine excreted from each kidney. The severity of this experimental anuria could be correlated in most of their experiments with the degree of hemoglobinemia. They regarded, therefore, the amount of free hemoglobin in the plasma as a basis for comparing the therapeutic value of infusion fluids and diuretics. They found that plasma and saline solutions were the least effective infusion fluids for combating the anuria. They list the following solutions in increasing order of effectiveness: sodium lactate, 5 per cent dextrose in isotonic solution of three chlorides, 2 per cent urea in saline solution and 0.9 per cent saline solution with 0.87 per cent sodium bicarbonate. These solutions were effective in instances in which kidney damage was not great. Isotonic sodium sulfate, recommended originally by Maitland[4] for the treatment of the crush kidney, proved to be the most effective agent in combating the burn anuria. It has overcome anuria in all their experiments, including one of severe type in which the free plasma hemoglobin was over 4,000 mg. per hundred cubic centimeters. The concentration of free hemoglobin in the plasma was most effectively decreased by the use of sodium sulfate. While infusions of plasma gave an apparent reduction of plasma hemoglobin, this was demonstrated to be associated with the more prolonged diluting effect of the plasma.

The following substances had little diuretic effect when kidney impairment was great: mercuzanthin, aminophylline, thiamine, hydrochloride, ascorbic acid, nicotinic acid, vitamin B_2 and vitamin B_6. As to the danger of the use of isotonic sodium sulfate, Maitland has given in some of his cases as much as 8 liters during the first eleven days, with complete recovery. Olson and Necheles believe that it might be possible to give an initial injection of sodium sulfate to start the flow of urine and then to follow this with other diuretic agents.

Current Comment

FOLIC ACID IN BLOOD

Folic acid has been recognized as one of the vitamins of the B complex. Within the past few years it has been shown to be required for growth in the rat and for normal red cell production in the chick. Its beneficial effects in pernicious and other macrocytic anemias in man have been demonstrated,[1] and use of a microbiologic method of assay has revealed that whole blood of man and of cattle contains 2 micrograms of free folic acid per hundred cubic centimeters, whereas four to eight times as much is present in the whole blood of pigs, chickens and turkeys.[2] In all these species the plasma was found to contain less free folic acid than does the whole blood. When the blood was digested with the enzyme taka diastase, the folic acid conjugate was hydrolyzed with the release of large increments of the free vitamin, which in human blood amounted to forty to seventy times more than was originally present. Should it be demonstrated that the diet influences the blood concentration of folic acid, the adequacy of nutrition with respect to this important food factor can be demonstrated by this convenient and accurate type of blood analysis.

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[1] Shen, S. C.; Ham, T. H., and Fleming, Eleanor M.: Studies on the Destruction of Red Blood Cells, New England J. Med. **229:** 701 (Nov. 4) 1943.

[2] Olson, W. H., and Necheles, Heinrich: Studies on Anuria, Surg., Gynec. & Obst. **84:** 283 (March) 1947.

[3] Ross, J. F.: Hemoglobinemia and the Hemoglobinurias, New England J. Med. **233:** 691 (Dec. 6) 1945.

[4] Maitland, A. I. L.: Crush Injuries, Brit. M. J. **1:** 570 (April 12) 1941.

[1] Spies, T. D.; Suarez, R. M.; Suarez, R. M., Jr., and Hernandez-Morales: Science **104:** 75 (July 26) 1946. Moore, C. V.; Bierbaum, O. S., and Welch, A. D.: Fed. Proc. **5:** 236 (Feb.) 1946. Goldsmith, G. A., ibid. **5:** 232 (Feb.) 1946; Proc. Soc. Exper. Biol. & Med. **64:** 115 (Jan.) 1947.

[2] Schweigert, B. S., and Pearson, P. B.: Am. J. Physiol. **148:** 319 (Feb.) 1947.

THE PREVENTION OF AIR BORNE STREPTOCOCCIC *INFECTION*

In a review of the transmission by air of certain infectious diseases Robertson[1] deals especially with air borne streptococcic infection as studied in the army during the war. The spread of hemolytic streptococci was traced by virtue of their characteristic growth on blood agar and their occurrence in distinct serologic types. Cultures of the air in army hospitals and barracks revealed definite association between certain types of air borne streptococci and infections due to those types. Infected patients and healthy carriers are the primary sources of air borne pathogenic streptococci; secondary reservoirs are built up by accumulations in bedding, clothing and floor dust, from which they spread into the air. Direct association has been demonstrated between sweeping floors and making beds and the numbers of hemolytic streptococci recovered from the air. The fact that in a few hours the environment might become heavily seeded with hemolytic streptococci led to special studies of the ways in which the carrier contaminates his surroundings. It was found that "the *largest numbers of streptococci were dispersed by* persons harboring these micro-organisms in their noses; and, since such persons have been found to be the principal agents in the spread of streptococcic disease, they are to be regarded as dangerous carriers." Blowing the nose, sneezing and handling the nose and mouth by the carrier are regarded as the principal ways of contaminating the patient's clothing, the bedding, the air, the floor and other horizontal surfaces. Oiling clothing and floors restrains greatly the spread of streptococci in the air from these secondary reservoirs. The studies of triethylene glycol vapors as means of controlling the aerial spread of respiratory infection "are as yet too few to more than indicate promise," but notable advance has certainly been made toward the prevention in civil as well as military practice of the spread of respiratory infections by hemolytic streptococci.

PUBLICATIONS OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The publications of the Council on Pharmacy and Chemistry have long been used for pursuing rational therapeutics. New and Nonofficial Remedies, Useful Drugs and the Epitome of the U. S. P. and N. F. are titles familiar to physicians and medical students, and their usefulness is well known. The frequent revisions of these books provide authoritative information on what is new and of proved value. These Council sponsored volumes have just undergone revision and are now available from the publisher, the J. B. Lippincott Company, Philadelphia. New and Nonofficial Remedies contains the most recent information on the drugs accepted by the Council as of Jan. 1, 1947. The book is revised annually. This year the format has been changed slightly to place descriptions, actions, uses and dosage, and accepted brands and dosage forms in one section, and the tests and standards in another section. The latter are arranged alphabetically, while the former are grouped, as they have been for the past few years, in twenty-five chapters, the first one entitled "Agents Used in Allergy" and the last one "Vitamins and Vitamin Preparations." Useful Drugs and the Epitome likewise have undergone thorough revision. The consensus on what is the best in modern drug therapy is reflected in these publications of the Council on Pharmacy and Chemistry.

DESOXYRIBONUCLEIC ACID AND BACTERIAL "MUTATIONS"

For a number of years bacteriologists have known that the rough or avirulent strain of pneumococcus can be changed to the smooth or virulent strain by a number of successive animal passages. This change from the R *to* the S *strain* also follows a single injection if a vaccine prepared from the S strain is injected along with the R *strain.*[1] When it is changed to the S strain an R strain may revert to the type of pneumococcus from which it was derived or, depending on conditions, may change to another type, the type from which the vaccine was prepared. Through the intermediate R forms, type II S pneumococcus has been changed successively to types III S, II S and IV S.[2] These changes also take place in vitro in suitable culture mediums. The substance causing this transformation has been isolated and shown by serologic, chemical and enzyme methods to be desoxyribonucleic acid; it is active in dilutions as high as 1 : 30,000. An amount of purified nucleic acid splitting enzyme prepared from pancreas, desoxyribonuclease, added to a reaction system in amounts as small as 0.0012 microgram per cubic centimeter, inactivates the transforming substance.[3] The desoxyribonucleic acid fractions obtained from the various types of pneumococci cannot be differentiated on a chemical or serologic basis. These fractions do differ, however, in that they cause change of R forms to different types, the types from which the fractions were obtained.[4] The change of R to S forms which results from successive animal passage may be due to the action of small amounts of the specific desoxyribonucleic acid. The heat labile inhibiting substance for these changes found in serum may be desoxyribonuclease. Investigators have refrained from calling these changes true genetic mutations. The action of the transforming substance has been compared with the action of a virus and also with the causative agent of some fowl tumors. As the differences in form of these bacteria are attributable to differences in genetic structure, the change from one form to another, it would seem, must be attributed to genetic mutation.[4]

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[1] Robertson, O. H.: The Dispersal of Respiratory Pathogens in Relation to the Occurrence and Control of Air Borne Infections, Am. Rev. Tuberc. **55:** 109 (Feb.) 1947.

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[1] Griffith, F.: J. Hyg. **27:** 113 (Jan.) 1928.

[2] Dawson, M. H.: J. Exper. Med. **51:** 123 (Jan.) 1930.

[3] McCarty, Maclyn, and Avery, O. T.: J. Exper. Med. **83:** 89 (Feb.) 1946.

[4] McCarty, Maclyn, and Avery, O. T.: J. Exper. Med. **83:** 97 (Feb.) 1946.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Aug. 6, 1947.

Replacement for General Bradley as Veterans Chief

Gen Omar Bradley is slated to succeed General Eisenhower as army chief of staff following his six weeks tour of American outposts in Europe starting August 15 President Truman and his administration leaders are reported to be searching for a man to carry through Bradley reforms in the Veterans Administration, where he is now serving as administrator. Assisted by Major Gen Paul R. Hawley, chief medical director of the agency, General Bradley is credited with making valuable improvements in the medical and other departments Leading physicians and the larger medical schools now participate in the program The Veterans Administration has more than 200,000 employees Although Congress stressed economy in appropriations during the session just concluded, the agency will have $20,000,000 more than Mr. Truman requested for the medical and hospital departments However, the agency's administrative staff must be reduced

Study of Psychologic Aspect of Human Resources in Wartime

Dr. Vannevar Bush, chairman, Joint Research and Development Board, has announced formation of a committee on human resources to study the human element in modern warfare, particularly problems of psychology. On the committee are Donald C. Marquis, president, American Psychological Association; C. L Shartle, psychology department, Ohio State University; Frederick F. Stephan, sociology department, Cornell University; Samuel A Stouffer, social relations department, Harvard University; Major Gens. Fred L. Anderson and Raymond W. Bliss, and Col Fred C. Miller, U. S Army, A. H. Hausrath, Office of Naval Research; Rear Admiral J. W. Roper, U. S. Army, and Capt D. T. Eddy, U. S. Navy.

Senator Advocates Hospital Commemorating Booker T. Washington

Senator Revercomb, West Virginia, urged action on his proposal that a hospital for Negro war veterans be erected in Franklin County, Va, at the birthplace of Booker T Washington The Veterans Administration is stated to have opposed the plan on grounds that a hospital for Negro veterans should be near a Negro medical center.

Georgetown University Hospital Opened

The new Georgetown University Hospital has been opened to the public The new hospital increases patient capacity from 241 to 407 and replaces old cramped quarters with modern facilities For some time the institution has provided the only free medical care in the western limits of the Capital Since the Veterans Administration abandoned the Nevius tract in Arlington, Va, as a site for the projected veterans' hospital, the National Capital Park and Planning Commission has been studying other sites

Vice Admiral McIntire Heads National Group to Employ Handicapped

Vice Admiral Ross T. McIntire, former Surgeon General of the Navy, was elected president of the National Association for Employment of the Handicapped, succeeding Major General Graves B. Erskin, U. S Marine Corps, who returned to active duty. Dr. Merle E. Frampton, principal of the New York Institute for Education of the Blind, became vice president. Virgil Smirnow, assistant to the director of the B'nai B'rith vocational service bureau, was named executive secretary of the National Association of the Handicapped, Inc.

House and Senate Differ on Funds Allotted for Atomic Cancer Research

The House allocated $25,000,000 for cancer research to the Atomic Energy Commission, but a Senate spokesman indicated that the Senate would set a $5,000,000 limit for this purpose. The Congressional dispute over the amount of funds for cancer research arose during discussion of total funds for the agency. Chairman David Lilienthall and member L L Strauss said the commission had not asked for funds for this purpose and the House item came as a surprise Senators Reed of Kansas, Saltonstall of Massachusetts and Tydings of Maryland said they believed there might be overlapping in cancer research. The American Cancer Institute raised $13,000,000 for research through public contributions, and the National Cancer Institute received $14,000,000 from Congress. The commission is the only agency allowed to produce radioactive materials for cancer research, and some 60 institutions are being supplied The commission announced that Los Alamos, N. M., principal center for military applications of atomic energy, where the first A bomb was made, is now a permanent establishment.

Coming Medical Meetings

American Association of Medical Record Librarians, New York, Hotel Commodore, Sept 7-12 Mrs Adaline Hayden, 18 E. Division St, Chicago, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va, The Homestead, Sept 4-6. Dr. James R Bloss, 418 Eleventh St, Huntington 1, W. Va, Secretary

American College of Surgeons, New York, Waldorf Astoria Hotel, Sept. 8-12. Dr Paul B Magnuson, 40 E Erie St, Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2-6. Dr. Richard Kovacs, 2 E 88th St, New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St Louis, Municipal Auditorium, Sept. 8-12 Mr. Karl S. Richardson, 24 West Ohio St, Chicago, Business Manager.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Colorado State Medical Society, Denver, Shirley Savoy Hotel, Sept 17-20. Mr Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

International Cancer Research Congress, St Louis, Hotel Jefferson, 2-7. Dr Axel N Arneson, 510 S Kingshighway, St Louis, Chairman Committee on Local Arrangements

International College of Surgeons, U. S Chapter, Chicago, Palmer House, Sept 29-Oct 2 Dr. Louis J. Gariepy, 16401 Grand River Ave, Detroit 27, Secretary.

Kentucky State Medical Association, Louisville, Sept 29-Oct 2 Dr P E Blackerby, 620 S Third St, Louisville 2, Secretary

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept 24-26 Dr L Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary

Mississippi Valley Medical Society, Burlington, Iowa, Oct 1-3 Dr Harold Swanberg, 510 Maine St, Quincy, Ill, Secretary
Woolsey, 316 Atlas Bldg, Salt Lake City 1, Secretary

National Medical Association, Los Angeles, Aug 18-22 Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va, Secretary

Nevada State Medical Association, Reno, Sept 4-6 Dr Moreton J. Thorpe, 17 N. Virginia St, Reno, Secretary

Oregon State Medical Society, Portland, Sept 4-6 Dr Thomas S Saunders, 1020 S W. Taylor St, Portland 5, Secretary

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept 15-18 Dr Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary

Southeastern Dermatological Association, Knoxville, Tenn, Hotel Andrew Johnson, Aug 31. Dr A H Lancaster, 608 W Main Ave, Knoxville, Secretary

Utah State Medical Association, Salt Lake City, Sept 11-13 Dr Ray T. Woolsey, 316 Atlas Bldg, Salt Lake City 1, Secretary

Vermont State Medical Society, Burlington, Hotel Vermont, Oct 1-3 Dr Theodore H Harwood, 128 Merchants Row, Rutland, Secretary

Washington State Medical Association, Seattle, Olympic Hotel, Sept 28-Oct 1 Dr Harold E Nichols, 327 Cobb Building, Seattle, Secretary

Western New York and Ontario Urological Society, Saranac, N Y, Saranac Inn, Sept. 3-6. Dr. Albert M. Crance, 525 S Main St, Geneva, N Y, Secretary.

World Medical Association, Paris, France, Sept 17-20 Dr Charles Hill, B M A House, Tavistock Sq, London, W C 1, England, and Dr. P Cibrie, 60 boulevard de Latour Maubourg, Paris 7e, France, Joint Secretaries

Bureau of Information

LOCATION OF PHYSICIANS

Virginia Shuler
Chicago

This is the seventh of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

"Regarding the distribution of physicians for Georgia, it must be remembered this state is largely rural and that we have 159 counties. To say that a county has only one or perhaps as many as two physicians does not mean the people of our state are suffering for the want of medical care. Indeed, a survey of seventeen counties by the Medical Association of Georgia in cooperation with the United States Public Health Service, before the war, indicated that only two persons had failed to obtain the services of a physician when they sought such services, and one of these persons stated his physician was ill and was unable to respond to the call.

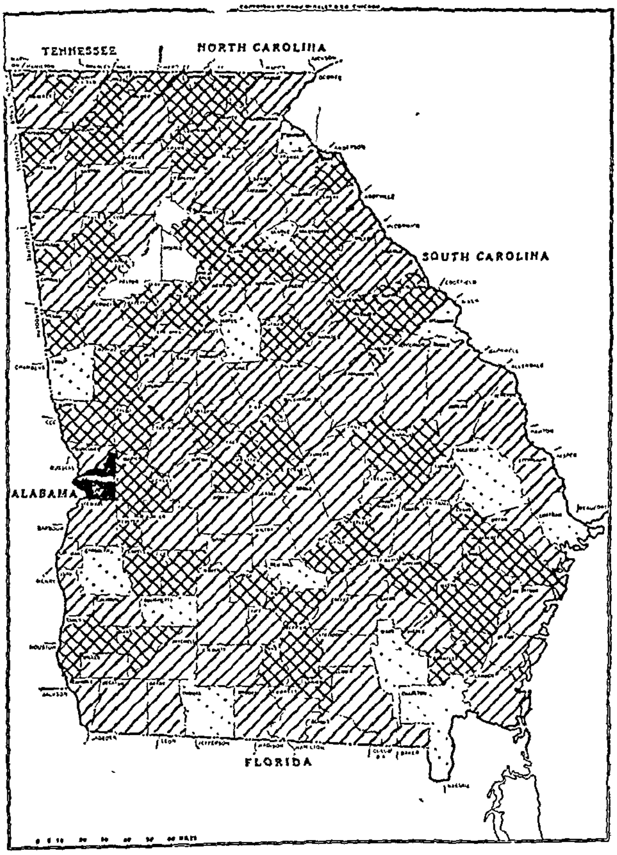
"Georgia sent more than 600 physicians to the war. During this period the people of our state cooperated with the profession and there is no record of any patient really suffering for the want of medical care. Many of these physicians have returned to their practices, and conditions for the state as a whole are improving daily. A number of new hospitals have been built and equipped and others are in the planning for the future medical and hospital care of our people. All of this will no doubt add to the general good health of our people."

Dr. Edgar D. Shanks,
Secretary-Treasurer,
Medical Association of Georgia,
478 Peachtree Street N.E.,
Atlanta, Georgia.

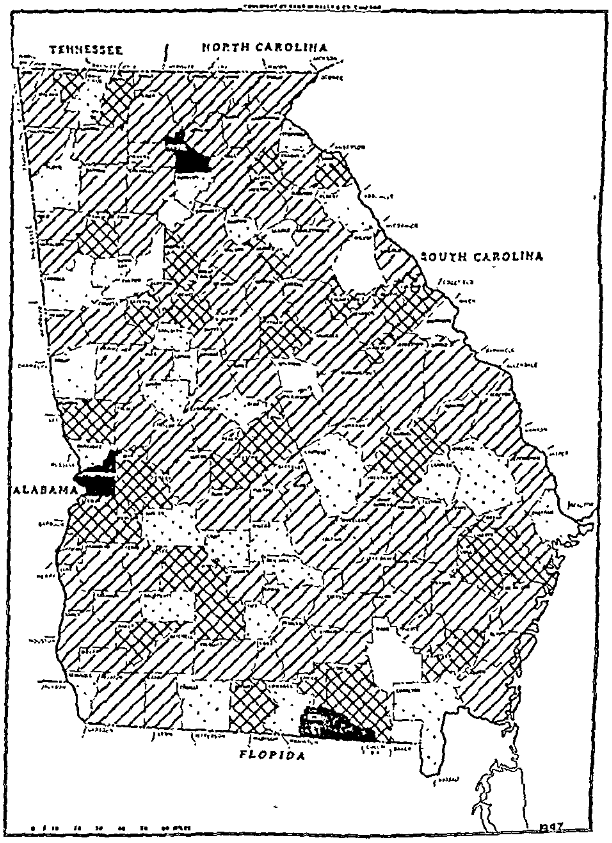
Areas in Georgia Requesting General Practitioners

County	Town	Population	County	Town	Population
Camden	Saint Marys	733	Paulding	Dallas	1,922
Crawford	Roberta	535	Union	Blairsville	358
Harris	Waverly Hall	569	Worth	Sylvester	2,191
Henry	Locust Grove	349	Wilcox	....	12,755

GEORGIA—1946



GEORGIA—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.
Key: Physician-population ratio, by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

ALABAMA

Areas in Alabama Requesting General Practitioners

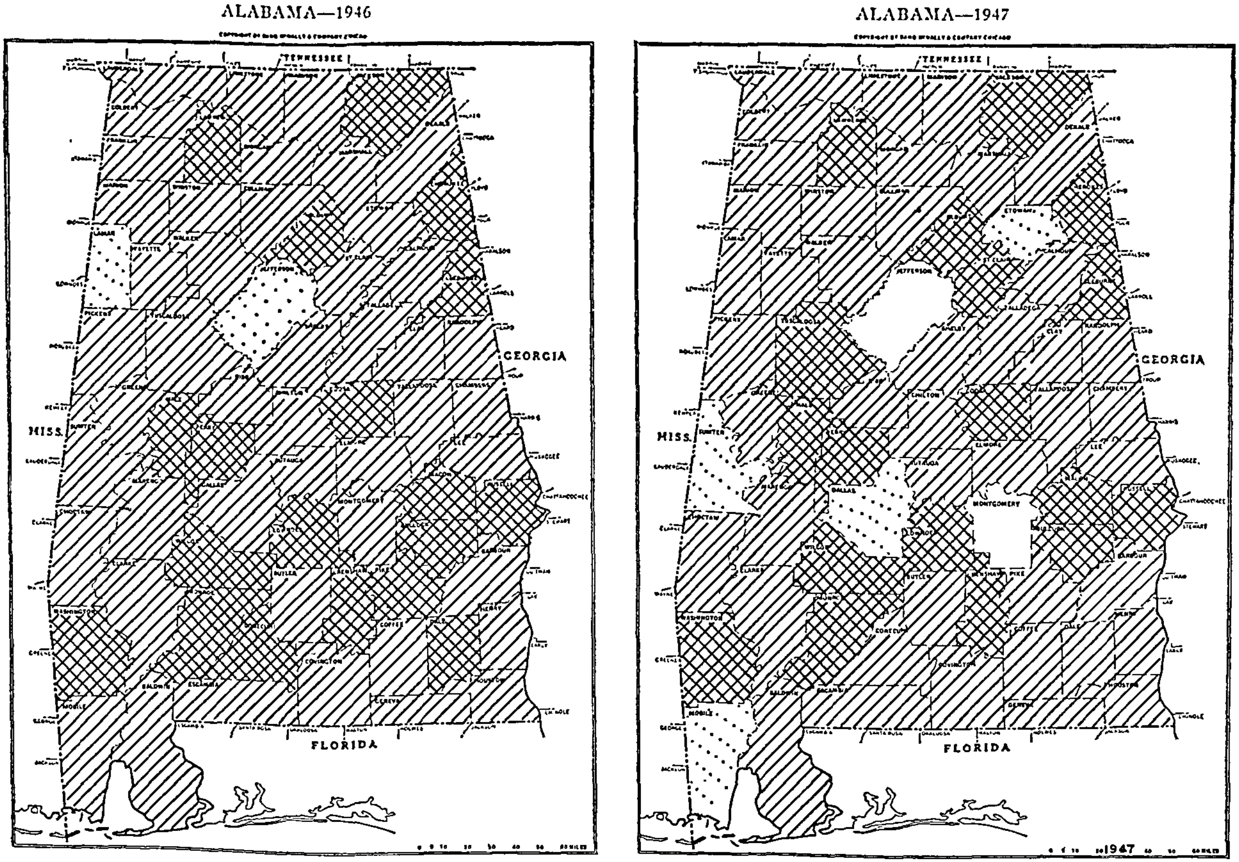
County	Town	Population	County	Town	Population
Baldwin	Robertsdale	779	Butler	....	32,447
Barbour	Clayton	1,813		Georgiana	1,627
Bibb	West Blocton	1,317	Cherokee	Cedar Bluff	436
Blount	Oneonta	2,376		Center	1,012
Bullock	Midway	617	Chilton	Jemison	456
	Union Springs	3,107		Thorsby	772

Areas in Alabama Requesting General Practitioners—Continued

County	Town	Population
Clay	Lineville	1,300
Cleburne		13,629
	Fruithurst	281
	Heflin	1,684
Colbert	Cherokee	786
Conecuh	Castleberry	609
Coosa	Goodwater	1,028
	Rockford	394
Crenshaw	Highland Home	260
Dale	Ariton	561
	Midland City	647
Dallas	Pleasant Hill	200
DeKalb	Crossville	430
	Fyffe	100
Elmore		31,546
	Deatsville	210
	Titus	125
Escambia		30,671
Fayette	Fayette	2,068
Franklin	Vina	472
Geneva	Samson	2,182
Greene	Boligee	241
	Eutaw	1,895
Hale	Akron	504
Houston	Ashford	1,224
Jackson	Bridgeport	2,031
	Estillfork	106
Jefferson	Birmingham	267,583
Lamar		19,708
Lee	Waverly	321
Lowndes	Haynesville	525
	Lowndesboro	350
Macon		27,654
Madison	Gurley	581
Marengo		35,736
Marion	Guin	1,175
Mobile	Calvert	239
Mobile	Grand Bay	500
Montgomery	Ramer	500
Morgan	Falkville	567
Perry		26,610
Pickens	Aliceville	1,475
Pike	Banks	252
	Brundidge	1,909
Randolph	Wadley	493
	Wedowee	525
Russell		35,775
St. Clair	Asheville	385
	Ragland	1,070
Shelby	Calera	1,092
Sumter	Epes	328
Talladega	Munford	549
	Sylacauga	6,269
Tallapoosa		35,270
	Dadeville	2,025
Washington		16,188
	Chatom	823
Wilcox		26,279

"Distribution of physicians is improving, although there yet remain areas in need of them. The largest centers of population have been fortunate in adding to their total of practitioners, and some of the smaller centers have been provided for also."

Dr. Douglas L. Cannon, Secretary,
The Medical Association of the State of Alabama,
519 Dexter Avenue, Montgomery.


ALABAMA—1946

ALABAMA—1947

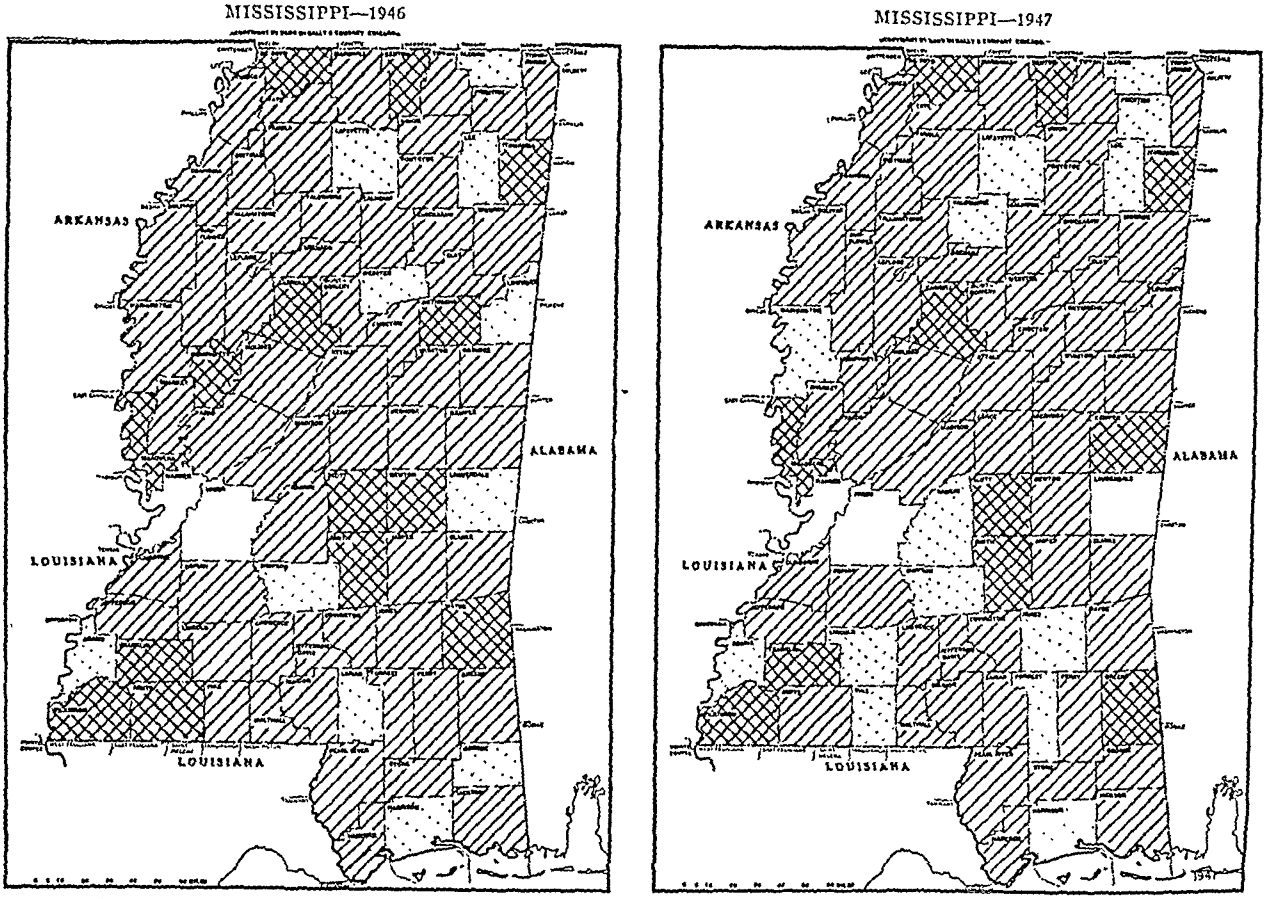
Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

MISSISSIPPI

"The distribution of physicians throughout Mississippi has improved very markedly since V-J day. There are still a few rural places which need supplying, but the demand is not nearly as pressing as it was during war days."

Dr. T. M. Dye, Secretary,
Mississippi State Medical Association,
Box 295, Clarksdale.


MISSISSIPPI—1946

MISSISSIPPI—1947

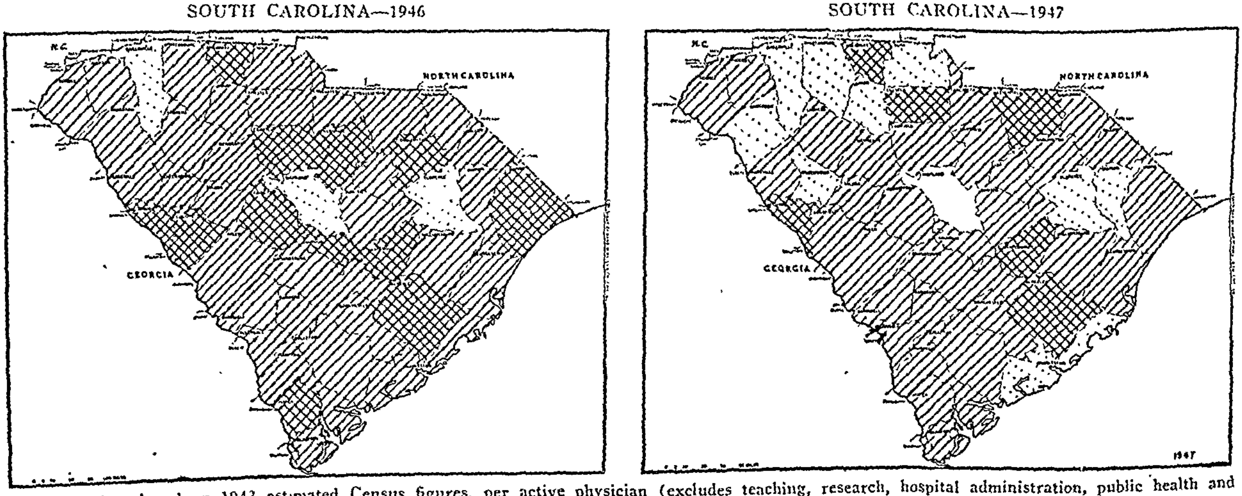
Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Mississippi Requesting General Practitioners

County	Town	Population	County	Town	Population
Benton		10,429	Panola		34,421
Forrest	Petal	500	Prentiss		20,521
Hinds		107,273	Rankin		27,931
Itawamba		19,922	Simpson		22,024
Kemper		21,867	Tate		19,309
		58,247	Tippad		19,680
		25,522	Tishamingo		16,974
Monroe		37,648	Union		21,867
Noxubee		25,669	Webster		14,160
Oktibbeha		22,151	Winston		22,751

SOUTH CAROLINA


SOUTH CAROLINA—1946

SOUTH CAROLINA—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

"Generally speaking, South Carolina is probably as well off for physicians as she was before the war. Most of the larger communities appear to be cared for fairly satisfactorily. There is still a need in the rural areas in South Carolina, as in other states, for more physicians. A surprising number of men coming back from the services are going into general practice. Our greatest need at the present time is for more physicians for rural areas and for the colored population."

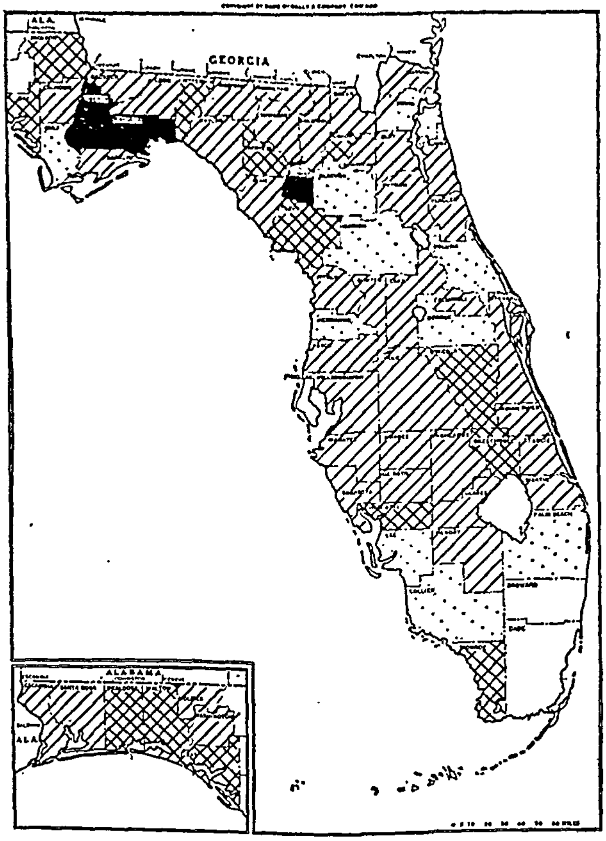
JULIAN P. PRICE, M.D., Secretary,
South Carolina Medical Association,
Florence, S. C.

Areas in South Carolina Requesting General Practitioners

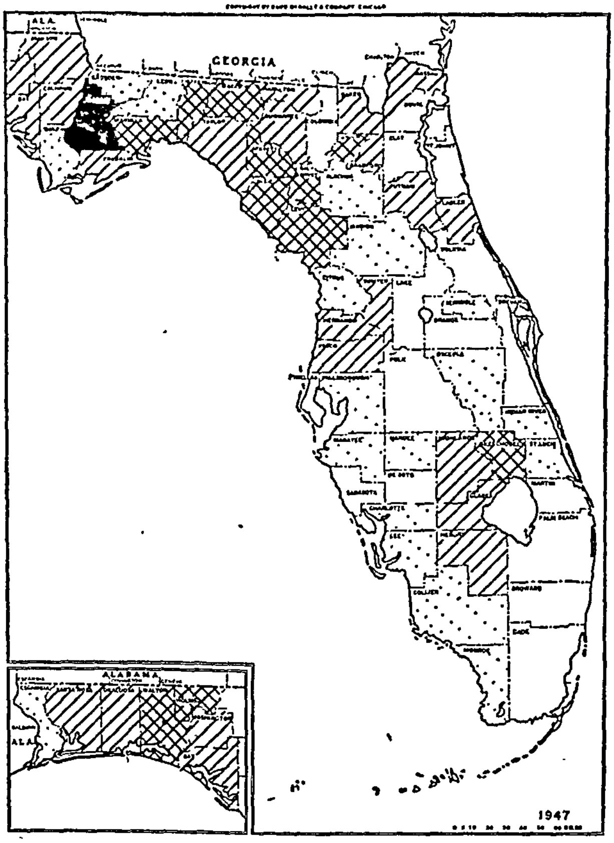
County	Town	Population	County	Town	Population
Aiken		6,168	Greenwood		13,020
Calhoun		16,229	Johnston		1,100
Dorchester		19,928	Lee		24,908
Edgefield		2,119	Spartanburg		127,733

FLORIDA

FLORIDA—1946



FLORIDA—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Florida Requesting General Practitioners

County	Town	Population	County	Town	Population
Baker		6,510	Okeechokee		3,000
Columbia		16,859	Osceola		10,119
Gadsden		31,450	Pasco		13,981
Hamilton		9,778	Pinellas	Gulfport	1,581
Jackson	Round Lake	150	Polk		86,635
Lake	Umatilla	1,149	Seminole		22,304
Liberty		3,752	Wakulla		5,463
Martin		6,295		Crawfordsville	500
			Walton	DeFuniak Springs	2,570

STEWART G. THOMPSON, D. P. H., Managing Director,
Florida Medical Association,
P. O. Box 1018, Jacksonville 1.

GOVERNMENT SERVICES

NAVY

NEW NAVAL HOSPITAL

The cornerstone of the new U. S. Naval Hospital under construction near Beaufort, S. C., was laid with appropriate ceremonies to which the public was invited July 18. In attendance were a number of Congressmen who flew from Washington, also Rear Admirals L. T. DuBose, Commandant, Sixth Naval District, C. A. Swanson, Surgeon General of the Navy, and J. J. Manning, chief, Bureau of Yards and Docks, and Major General Franklin A. Hart, commanding general, Marine Corps Recruit Depot, Parris Island, S. C., also some state senators and representatives and mayors of nearby cities. During the ceremony Admiral Swanson placed papers in the cornerstone dating back to 1863 and comprising the first request for a naval hospital to be built in this area.

PHYSICIANS VISIT NAVAL AIR BASE

To gain first hand knowledge of the operation of a naval air base a group of physicians departed from Glenview, Ill., and certain points in Michigan on a Marine Corps air transport landing at Pensacola, Fla., in July, where they toured the naval headquarters as the guests of the commander, Capt. William Sinton. The party boarded the aircraft carrier *Wright*, Capt. W. K. Berner, U. S. Navy, in command, to spend two nights and a day in the Gulf of Mexico and take part in certain activities of the ship. The party comprised Rear Admiral F. L. Conklin (MC), U.S.N., of the Ninth Naval District, Drs. John B Youmans, dean, University of Illinois Medical School, and Granville A. Bennett, Chicago; Dr. A. C. Furstenberg, dean, and Bradley Patten, Ph.D., University of Michigan Medical School; Drs. Warren E. Forsythe, director, University of Michigan Health Service, and Charles S. Kennedy, member of the board of regents, University of Michigan; Drs. Carey P. McCord, medical director for the Chrysler Corporation, Grover C. Penberthy and Archibald D. McAlpine, all of Detroit; Dr. Joseph J. Furlong of Marquette University Medical School, Milwaukee, and Michael A. Gorman, Flint, Mich.

NAVY AWARDS AND COMMENDATIONS

Commander Sam A. Bassett

The Bronze Star Medal has been awarded to former Commander Sam A. Bassett (MC), U.S.N.R., now in civilian practice in St. Louis. The citation read as follows: "For meritorious service in connection with operations against the enemy during the period Sept. 12, 1944 to April 28, 1945, while serving as medical officer of an escort carrier. During this period he participated in five major amphibious operations. His resourcefulness, great skill in administering to the wounded, coolness, gallantry and devotion in the prosecution of his duties when under attack by enemy dive bombers, torpedo planes, suicide bombers and an overwhelmingly superior surface force were a tremendous inspiration to officers and men alike. He contributed materially to the success of these operations against the enemy, and his performance of duty was at all times of outstanding efficiency and in keeping with highest traditions of the naval service." Dr. Bassett graduated from Washington University School of Medicine, St. Louis, in 1931 and entered the military service in 1940.

VETERANS ADMINISTRATION

MEDICAL AND PSYCHIATRIC SOCIAL WORKERS NEEDED

Vacancies exist for medical and psychiatric social workers in Veterans Administration installations throughout the country. Qualified social workers may file application in Veterans Administration hospitals, regional offices and clinics throughout the United States. Civil Service commission information regarding these positions may be obtained from any first or second class post office also. The salaries range from $3,397.20 to $8,179.50.

NURSES WANTED FOR TUBERCULOSIS HOSPITALS

The Veterans Administration is endeavoring to recruit nurses for assignments to tuberculosis hospitals. A training center has been established at Oteen, N. C., for graduate and senior cadet nurses, where particular emphasis is placed on protective measures to prevent as far as possible the dissemination of tubercle bacilli. Nurses wishing to specialize in this kind of work or any other clinical field may earn salaries equivalent to those heretofore available only in the field of nursing administration. The salaries range from $2,644 to $6,000. Applications should be submitted to the VA branch office having jurisdiction over the territory where the nurse desires to work.

TRAVELING MENTAL CLINIC

In order to provide more adequate patient care and follow-up care, and to effect a more rapid turnover of hospital beds, the psychiatric division of the Veterans Administration is loping a pilot traveling mental hygiene clinic which will from the Veterans Administration hospital at Lyons, N. J. The clinic will function administratively under the regional office, with the hospital supplying the professional personnel.

PERSONAL

Dr. Joseph A. McMullin, San Diego, Calif., rear admiral, U. S. Navy, retired, has been appointed chief medical officer of the Michigan veterans facilities, Grand Rapids. Dr. McMullin, a graduate of Jefferson Medical College, Philadelphia, served many years in the medical corps of the navy. He was in charge of the naval hospital at Pearl Harbor prior to the war and a former member of the faculty of medicine of the University of the Philippines. Dr. Edmund Quirk of Detroit also has been appointed a member of the staff of the Michigan Veterans Facilities, Grand Rapids. Dr. Quirk, a graduate of Wayne University Medical School, served abroad during World War II and since returning to civilian life has been on the staff of the Detroit Receiving Hospital.

Dr. George L. Johnson, formerly manager of the Veterans Administration hospital at Tuscaloosa, Ala., and recently on the staff of the Veterans Administration hospital at Thomasville, Ga., has been appointed chief medical officer of the Alabama regional office, succeeding Dr. Harley B. Fisk, who goes to the Miami, Fla., office as chief regional medical officer. Dr. Johnson is a veteran of both world wars and has been with the Veterans Administration since 1919.

Dr. Jerome Karmiol, chief medical officer in the regional office, Miami, Fla, has resigned to enter private practice. Dr. Karmiol, who is said to have organized the Veterans Administration regional medical clinic in Miami, will continue to serve as a part time member of the clinic staff.

Dr. Francis J. Phillips has resigned as superintendent of the Morgan Heights Sanatorium, Marquette, Mich., to accept the position as surgical chief of the 1,000 bed veterans' hospital in Temple, Texas. Dr. Phillips served in Europe with the Army in the recent war as a flight surgeon.

PUBLIC HEALTH SERVICE

CANCER CONTROL PROGRAM EXPANDED

The U. S. Public Health Service has expanded its program for cancer control. In the fiscal year which began July 1 funds to the extent of $2,500,000 will be allotted for this purpose to state health agencies, according to the following formula, which is similar to the one used last year: 30 per cent on population, 30 per cent on financial need, 35 per cent on cancer mortality and 5 per cent on population density. Using this formula as a basis, the total allotment for the state of Alabama, for example, for the fiscal year for cancer grants in aid is $60,529, and for the state of New York $209,602. Payments to the states will be made quarterly. Up to 15 per cent of the funds may be used to cover the cost of administration of the general health program and services not directly identified as cancer, when such services support the cancer control program. If any state requires more than 15 per cent for this purpose and can justify such requirement in writing, exceptions may be made. The Surgeon General will report from time to time to the National Advisory Cancer Council on the progress of the program.

Up to $1,000,000 available for cancer control will be used to support special cancer programs, and official state agencies may qualify for funds in the special project program. Medical schools, hospitals and other health agencies may also receive grants. Such plans and requests under the special projects program must be submitted through state health departments. The special projects fund will be expended mainly for postgraduate training of clinicians, surgeons, pathologists, radiologists and others specializing in cancer work, for short term training courses for general practitioners and for coordinated and concentrated teaching of cancer in medical and dental schools.

Every effort will be made to cooperate with the American Cancer Society and with the various national professional societies with substantial interest in the cancer problem, and the Public Health Service will encourage state health agencies to cooperate with similar bodies in the development of programs at their level.

THE NATIONAL MENTAL HEALTH PROGRAM

The national mental health program authorized by Congress in 1946 was implemented on July 8 by an appropriation of seven and a half million dolars. The Surgeon General, U. S. Public Health Service, has announced that the program calls for activity in three major fields: (1) increased research into problems of mental health, (2) increased training of urgently needed personnel and (3) increased support and stimulation of state efforts to develop adequate mental health programs.

About $400,000 will be spent during the present fiscal year for research by providing grants-in-aid to universities, hospitals, laboratories and other public and private institutions and to qualified individuals. With these grants, twenty-five research projects will be conducted in biochemistry, neurophysiology, delinquency, child psychology, alcoholism, psychosomatic medicine, psychotherapy and shock therapy. The fund also provides research fellowships in fields related to mental health, of which fourteen have been awarded.

Over a million dollars will be spent for grants to public and other nonprofit institutions for the development and improvement of facilities for training mental health personnel. The grants include seventeen in psychiatry, sixteen in clinical psychology, nine in psychiatric social work and nine in psychiatric nursing. This fund will also provide for training stipends for seventy graduate students in psychiatry, forty-one in clinical psychology, forty in social work and fifty-eight in psychiatric nursing.

A sum of $3,000,000 is appropriated for grants-in-aid to states for local mental health programs. The goal of the Public Health Service in the grants to states program is the establishment by the states program of one outpatient mental health clinic for each hundred thousand of the population and the provision of services to sparsely settled and rural areas through traveling clinics. State programs and budgets are now being received and grants are being allocated as soon as the plans are reviewed and approved. In addition, it is planned to establish demonstration clinics operated by the Public Health Service, and inservice training programs and training institutes for general practitioners in several states. Personnel will be lent to the states on request to aid local programs.

The remainder of the funds appropriated will be used for field studies in mental hygiene and the operation of the two U. S. Public Health Service hospitals for drug addicts and the mentally ill at Lexington, Ky., and Fort Worth, Texas.

NATIONWIDE INVENTORY OF SANITATION NEEDS

The Sanitary Engineering Division of the U. S. Public Health Service has completed an inventory of sanitation needs throughout the country. Among the estimates made as a result of the inventory is that more than a hundred million people of our cities need improved water supply and disposal facilities, and that it would cost $7,834,581,000 to provide them. This is said to be the minimum which should be spent to reduce the incidence or potential incidence of such diseases as dysentery, diarrhea and typhoid. This inventory, the Public Health Service states, the most complete inventory of basic sanitation needs ever compiled for the nation, was made with the coöperation of health departments of every state and hundreds of county and city health departments. "The cost of obtaining the healthy environment essential to a national health program" is itemized state by state. Almost 40 per cent of the needed construction is now at least at the planning stage, according to the survey. More than 9 per cent of the needed sewerage facilities costing about $360,509,000 is ready for construction; an additional 24 per cent costing $908,048,000 is definitely planned. Almost 17 per cent of the needed water supply systems costing $381,829,000 is ready for immediate construction, and plans are in progress for an additional 27 per cent costing $612,111,000.

In towns of less than 1,000 population the needs exceed $100 per capita, while in cities of more than 100,000 population the needs exceed $80 per capita. In towns of intermediate size the cost is about $50 and in rural areas $40. The cost estimates take into account variations in economic status and in practices and policies of local communities.

FEDERAL AID FOR CONSTRUCTING MEDICAL FACILITIES

The construction of millions of dollars' worth of hospital and health facilities during the fiscal year 1948 will be possible under the appropriations act signed by the President on July 8, Thomas Parran, Surgeon General, U. S. Public Health Service, announced. Although no federal funds were directly appropriated, the act sets up a procedure which obligates the federal government to pay up to $75,000,000 as its share of approved hospital construction, bringing the potential combined total of federal, state and local funds to $225,000,000. States need not delay their hospital construction plans, since they now have assurance that any construction project approved by the Surgeon General creates a contractual obligation on the part of the federal government to meet its one-third share of the cost.

This legislation implements the construction phase of the Hospital Survey and Construction Act passed by Congress last year, authorizing the appropriation of 3 million dollars for survey and planning and 75 million dollars for construction annually for five years. Two and a quarter million dollars was appropriated last year to assist the states in surveying existing hospital facilities. The 75 million dollars just appropriated for the fiscal year 1948 is the first money to be made available for construction. Funds may be used for health centers, laboratories, clinics and other medical facilities, as well as for hospitals.

All states and territories, including the District of Columbia, are conducting inventories of their hospitals and health facilities. So far construction plans of Indiana, Mississippi and North Carolina have been approved, and it is expected that more than half of the states will have submitted their plans by fall.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Arkansas

Carson, Layne E.	Augusta
Doane, Samuel N. Jr.	Arkadelphia
Jackson, Robert H.	Little Rock
Shuffield, Horace E.	Little Rock
Walsh, William V.	North Little Rock

California

Ashcraft, Granville P.	Los Angeles
Bennett, Crayton J.	Oakland
Dickmann, Richard C.	Glendale
Engel, Rodger R.	Santa Ana
Lange, Otto H.	Los Angeles
Pierce, Richard K.	San Francisco
Thomas, Bert S.	Sacramento
Walters, John D.	Los Angeles

Colorado

Hardy, Arthur B.	Denver
Miller, Alvin P.	Denver
Saliba, Nicholas S.	Walsenburg
Stumm, Philip W.	Denver
Vest, Maurice D.	Denver
Wahl, David L.	Denver
Zarlengo, Roland J.	Denver

District of Columbia

Dibbs, Alfred	Washington
Kriegman, George	Washington
Steinberg, Stanley H.	Washington
Stretch, Clarence L.	Washington
Treccase, Joseph P.	Washington

Georgia

Blumberg, Richard W.	Canton
Burdine, James M.	Marble Hill
Hendrix, John W.	Cartersville
Hiatt, Wilks O. Jr.	Savannah
Mitchell, Frank B. Jr.	Milledgeville
Mixson, Joyce F. Jr.	Valdosta
Mooney, Alfonso J. Jr.	Statesboro
Morgan, James C. Jr.	West Point

Illinois

Allers, William D.	Chicago
Aten, William G. Jr.	Chicago
Braun, Lester E.	Chicago
Cole, Irwin	Chicago
Dierker, Leroy J.	Neuvoc
Feldman, Harold	Pekin
Harned, John W.	Chicago
Jacobs, Howard M.	Chicago
Kaufman, Irving	Chicago
Rypins, Edwin J	Bloomington
Scanlon, Thomas B. Jr.	Decatur
Weiss, Harold R.	Chicago

Indiana

Harding, Myron R.	Indianapolis
Hardy, Lester L.	Lexington
Johnston, Donald D.	Fort Wayne
Kimbrough, Robert F.	Logansport
McDowell, Fletcher W.	Muncie
Schechter, John S.	Indianapolis
Walsh, Thomas P.	Garrett

Kansas

Beahm, Edgar H.	Kansas City
Holt, James H.	Wichita
Mitchell, Duane H.	Winchester
Richardson, Marion W.	Kansas City

Kentucky

Dade, James R.	Hopkinsville
Dickinson, John	Glasgow
Metheny, Ralph S.	Louisville
Simpson, Paul W.	Nicholasville
Smiley, Gordon L.	St. Matthews

Louisiana

Dileo, Joseph L.	New Orleans
Leonard, Alan J.	New Orleans
McDaniel, Edwin B.	New Orleans

Maryland

Baylus, Meyer M.	Baltimore
Goldstein, Marvin	Baltimore
Moody, Louis H. Jr.	Coral Hills
Saylor, Lloyd E.	Baltimore

Massachusetts

Blumenfeld, Irving H.	Springfield
Boral, Henry	Worcester
Lourie, Joseph R.	Newton
Miller, John F.	Newton
Sabbagh, Joseph N.	Methuen
Walker, Donald A.	Worcester

Michigan

Dawson, Ralph E. J.	Blanchard
Hoogerland, Clarence L.	Grand Rapids
Montante, Joseph R.	Detroit
Nell, Edward R.	Kalamazoo
Van Hoek, Donald E.	Ann Arbor

Minnesota

Golden, Peter B.	Rochester
Hayes, Albert F.	St. Paul
Neuenschwander, Harold L.	St. Paul
Swisher, Scott N. Jr.	Bayport
Van Cleve, Horatio P.	Minneapolis

Nebraska

Anderson, Milton H. Jr.	Omaha
Ekart, Paul I.	Wymore
Harrington, Albert E.	Hastings
Lavender, John G.	Lincoln
Rasmussen, John A.	Omaha

New Jersey

Cohen, Sidney J.	Bayonne
Devlin, Arthur D.	Newark
Franklin, Richard L.	Jersey City
Heenahan, Thomas A.	Union City
Rath, Charles K. Jr.	Elizabeth
Wade, George R.	Madison

New York

Benjamin, Martell	Brooklyn
Binckley, John W.	Rochester
Bodansky, Oscar	New York
Carey, Donald M.	New York
Carofiglio, Louis	St. Albans, L. I.
Craft, Girard J.	New York
Day, Richard G. Jr.	Schenectady
Dolgow, Joseph	Brooklyn
Donnelly, Walter G.	Brooklyn
Frick, Henry C.	Roslyn, L. I.
Glidden, Sawyer A.	Holley
Josephson, Arthur D.	Spring Valley
Kalter, Henry H.	Long Beach
Larkin, Edward A.	Amenia
Lipschik, Emanuel	Brooklyn
Lothringer, Harvey N.	Flushing
Miller, Melvyn R.	Elmhurst, L. I.
Nowill, William K.	Elmira
O'Hern, John A.	Hartsdale
Rogers, James A.	Rockville Centre
Ryan, Albert R.	New York
Saab, Joseph Richard	Lackawanna
Sacca, Joseph D.	Brooklyn
Shreve, Robert W.	New York
Siegel, Alan V.	Yonkers
Toye, Joseph J.	Brooklyn
Tracy, Edward M.	Lackawanna
Vamvas, George S.	Brooklyn
Walker, Roland J.	Auburn
Wanderman, Sidney E.	New York

Ohio

Alt, Louis P.	Cincinnati
Cultrone, Frank T.	Cleveland
Dorner, Arthur F.	Akron
McCammon, Floyd A.	Van Wert
Schwab, Louis	Cincinnati
Vecchio, Frank	Cleveland
Williams, Robert F.	Cleveland

Oregon

Breese, Melvin W.	Portland
Brown, Merle F.	Independence
Cooke, Donovan O.	Clatskanie
Hunt, Calvin L.	Klamath Falls
MacDonald, Donald C.	Scio
Neikes, Robert D.	Portland

Pennsylvania

Allen, Robert W.	Reading
Bullard, Arch H.	West Alexander
Cramer, Harry R.	Mifflin
Derham, Robert J.	Philadelphia
Dickinson, Robert J.	DuBois
Grieco, Victor F.	Williamsport
Haberman, William B.	Weissport
Hamilton, Lorin D.	Philadelphia
Kron, Samuel D.	Philadelphia
Leslie, Warren D.	Masontown
Lipschutz, Arthur	Philadelphia
Nye, Robert B.	Philadelphia
Rodham, Russell D.	Scranton
Rosenzweig, Max	Philadelphia
Samolis, Joseph G.	Pottsville
Wallace, Robert W.	Pittsburgh

Rhode Island

Chiffelle, Thomas L.	Slatersville
DiMaio, Michael	Providence
Moore, Marlin C.	Cranston
Moran, James B.	Providence

Tennessee

Brinkley, Joseph W.	Memphis
Buttram, William R.	Chattanooga
Conditt, Abraham K. Jr.	Nashville
Eddins, Elmer S.	Memphis
Elrod, Parker D.	Nashville
Foster, James R.	Memphis
Haralson, Robert H. Jr.	Maryville
Jacob, William S.	Knoxville
Lipscomb, Albert B.	Nashville
Pedigo, Howard K.	Memphis
Sanders, Dan S. Jr.	Nashville
Stoltz, Charles R.	Oak Ridge

Texas

Browne, Charles F.	Lubbock
Butler, Donald B.	Houston
Crow, Howard G.	Waco
De Ware, Jesse M.	Jefferson
Henry, Colvern D.	San Antonio
Jacobson, Merlin E.	Amarillo
Lowe, Percy E.	Houston
Matthis, Austin W.	Darrouzett
Moody, Irving W.	Galveston
Ross, Nealie E. Jr.	Fort Worth
Salter, John J.	San Antonio
Shannon, Arthur W. Jr.	Houston
Simmang, Arthur V.	San Antonio
Walker, Horace G.	Midland
Walthall, Walter	San Antonio
Zink, Linus A.	Pecos

Vermont

Ryan, William A.	Rutland
Swift, Charles C.	Rutland
Zanconato, Guerrino J.	Winooski

Washington

Boyer, William F.	Fort Lewis
Kittredge, George S.	Seattle
McConnell, Graham S.	Pullman

Wisconsin

Alleman, Russell J.	Wauwatosa
Barker, Donald E.	Chippewa Falls
Bradley, David J.	Madison
Hanson, Emmet R.	Milwaukee
Mrkvicka, Ernest L. Jr.	Racine
Smith, Robb	Ashland
Snartemo, Reuben J.	Milwaukee
Wagner, Alphonse J.	Brillion

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Harlow Brooks Clinical Conference.—The eighth Harlow Brooks Memorial Navajo Clinical Conference will be held at Sage Memorial Hospital, Ganado, August 25-27. The scientific program will include discussions of numerous medical topics by speakers from various states.

CONNECTICUT

Dr. Thoms Appointed Head of Department.—Dr. Herbert Thoms, associate professor of obstetrics and gynecology, Yale University School of Medicine, has been appointed professor and chairman of the department. Dr. Thoms graduated from Yale University Medical School in 1910 and studied at Johns Hopkins Hospital, 1914-1915. He became an assistant in obstetrics and gynecology in 1915, an assistant in pathology, 1916-1917, and an associate clinical professor of obstetrics and gynecology 1925-1927, when he became associate professor. He has also served as curator of the Yale Medical Memorabilia and has been an associate in obstetrics and gynecology at Grace-New Haven Community Hospital University service.

Society Honors Fifty Year Practitioners.—A dinner in honor of six members of the local medical society who had completed fifty or more years in the practice of medicine was held May 28 in Danbury. The physicians were presented with commemorative bronze medals inscribed with the caduceus, the name of the Danbury Medical Society and, on the reverse side, the name and number of years of practice of each individual. The doctors so honored were William T. Bronson, William F. Gordon and the late Howard D. Moore, all of Danbury, Homer F. Moore, Bethel, Paul U. Sunderland and Frederic W. Wersebe, Washington. Dr. James R. Miller, Hartford, president of the Connecticut State Medical Society, attended the dinner.

FLORIDA

Personal.—Dr. J. Randolph Perdue, Miami, has been elected president of the South Atlantic Association of Obstetrics and Gynecology. The territory covered by this association includes Virginia, North Carolina, South Carolina, Georgia and Florida.

Short Course for General Practitioners.—About 100 physicians attended the fifteenth annual graduate short course designed especially for Florida's general practitioners in Jacksonville, June 23-28. The course was presented by the Department of Medicine of the University of Florida Graduate School in cooperation with the Florida Medical Association and the Florida State Board of Health. Among the physicians addressing the group were professors from Vanderbilt University School of Medicine, Nashville, Tenn.; Tulane University of Louisiana School of Medicine, New Orleans; Duke University School of Medicine, Durham, N. C.; Johns Hopkins University School of Medicine, Baltimore, and members of the U. S. Public Health Service.

ILLINOIS

Health Officer Appointed.—Dr. Dale E. Scholz, formerly of the Middletown, Conn., Health Department, has been appointed director of public health of the new Wabash-Lawrence Health Department. Dr. Scholz received his medical degree from the University of Rochester School of Medicine, Rochester, N. Y., and his public health degree from Columbia University College of Physicians and Surgeons, New York.

Celebrate Centennial of State Hospital.—The state hospital at Jacksonville celebrated on July 27 the one hundredth anniversary of its establishment as the first institution in Illinois for the care of the mentally ill. State officials and representatives of veterans' organizations participated in the program. Richard W. Rowe, state treasurer, representing Governor Green, spoke on "Illinois—the Humanitarian," and Dr. Winfred Overholser, Washington, D. C., president of the American Psychiatric Association, discussed "Jacksonville, 1847—Psychiatry Then and Now." Beginning as an institution that cared for 138 patients, today it has a resident patient population of 3,084.

Chicago

Appoint Toxicologist.—Dr. Carl C. Pfeiffer, head of the department of pharmacology, University of Illinois College of Medicine, Chicago, will serve as toxicologist of Cook County until further notice, Coroner Albert L. Brodie announced July 14, succeeding Dr. William D. McNally. Dr. Pfeiffer, it is said, will receive $1 a year. The Cook County arrangement with Dr. Pfeiffer is expected to be the forerunner of a state laboratory available to all Illinois coroners.

Society Extends Postgraduate Courses.—The Chicago Medical Society will sponsor two postgraduate courses to be held in Thorne Hall on the Northwestern University Campus this fall. A course on cardiovascular diseases will be given October 20-25 and one on gastroenterology October 27 to November 1, with authorities from Chicago and various parts of the United States teaching. Enrolment is limited to 100. Applications may be sent to the office of the Chicago Medical Society at once, accompanied with the fee of $50 for each course.

Open Treatment Center for Alcoholic Addicts.—The Chicago Welfare Department opened Portal House, 5059 Vincennes Avenue, June 28, to alcoholic addicts in the city's welfare department to rehabilitate persons on relief who are unable to hold jobs because of addiction to alcohol. Portal House will have a full scale rehabilitation program providing medical care and group and occupational therapy. Treatment will be for four weeks, with a one year follow-up of the patient's progress. Doctors from the University of Illinois and the Illinois Neuropsychiatric Institute staff the wards. Members of Alcoholics Anonymous are cooperating on the program.

Dr. Coggeshall Appointed Dean.—Dr. Lowell T. Coggeshall, Chicago, professor and chairman of the department of medicine at the University of Chicago Medical School, has been appointed dean of the division of biologic sciences at the university, succeeding R. Wendell Harrison, Ph.D., who has been appointed vice president of the university. The division includes the school of medicine. A graduate of Indiana University School of Medicine in 1928, Dr. Coggeshall served as assistant professor of medicine at the University of Chicago Hospital, 1928-1935. For the next five years he was a member of the staff for research on tropical diseases, International Health Division of the Rockefeller Foundation in New York. In 1940 he went to the University of Michigan as a professor of preventive medicine in the School of Public Health and in 1942 became chairman of the department of tropical diseases there. He was commissioned lieutenant commander in the United States Naval Reserve in January 1944 and was promoted to commander in March of that year.

Smallpox Vaccination.—The board of health, after learning that a waiter had come down with smallpox soon after leaving Chicago, set up four vaccination centers in the area of the waiter's residence July 25 and quarantined possible sources of infection. The vaccination of residents of the square mile area of contact will continue for sixteen days. The health department assigned twenty-five doctors and nurses to work with the ambulances and three public clinics. Dr. Herman N. Bundesen, president, Chicago Board of Health, closed the commissary when he learned that the waiter had loaded food onto a train and ordered fifty commissary employees vaccinated immediately. He advised that the commissary of the Fred Harvey System supplying materials to the Santa Fe railroad is under quarantine with fifteen of its employees. The patient, who had prodromal symptoms for three days previous to leaving Chicago, was taken from the train at Clovis, N. M., when he became ill. Los Angeles health authorities boarded the Santa Fe train at San Bernardino to vaccinate the 138 passengers and crew members or place them under fourteen day quarantine. This patient had never been vaccinated.

INDIANA

Special Automobile License Plates.—The director of the state bureau of motor vehicles, H. Dale Brown, has announced that special license plates will be issued to Indiana physicians next year. The plates will carry the initials M.D. and will be numbered 1 to 4000. According to Mr. Brown, they are intended to expedite the work of physicians en route to emergency cases.

New Board of Health Building.—Plans for a new state board of health building have been approved by the state board health. The four story structure will contain a laboratory, office space and facilities to carry out the state public health program. There will be an auditorium with 136 seats and additional space for temporary seats and exhibits. The present quarters of the board of health will be turned over to Indiana University for laboratories and administrative offices.

LOUISIANA

Head of Preventive Medicine Department.—Dr. Robert L. Simmons, Meridian, Miss., became head of the department of preventive medicine and public health at Louisiana State University School of Medicine, New Orleans, August 1. Dr. Simmons, a graduate in public health of Louisiana State University School of Medicine, 1937, has been director of the Lauderdale County Health Department in Mississippi.

New Orleans-Metairie Hospital Foundation — The Metairie Hospital and the New Orleans-Metairie Hospital Foundation have opened a one story brick building in central Metairie to provide medical and hospital care for certain indigent cases that are recommended by the civic, church and other groups in Metairie. Facilities are available to all qualified licensed physicians in Louisiana. In addition to the regular hospital staff, there will be an open staff membership The facilities comprise emergency and operating rooms, delivery room, x-ray and fluoroscopic equipment, laboratory and pharmacy. There are 22 semiprivate beds and 8 bassinets. The director of the hospital is Dr. William K. Gauthier. The New Orleans-Metairie Hospital Foundation was organized by a group of business and professional men for the purpose of providing hospital facilities in this area.

MASSACHUSETTS

Discontinue Distribution of Toxin-Antitoxin. — The public health council of the commonwealth of Massachusetts discontinued the distribution of toxin-antitoxin on June 30 in accordance with recommendations of the National Institute of Health and authorities on diphtheria immunization. The opinion was that toxin-antitoxin mixtures should be entirely replaced by diphtheria toxoid for diphtheria immunization.

Woman Chemist to Receive Medal.—Mary L. Sherrill, Ph.D., head of the department of chemistry, Mount Holyoke College, South Hadley, will receive the Francis P. Garvan medal honoring women in chemistry at the national meeting of the American Chemical Society in New York, September 15-19. During the war Dr. Sherrill conducted investigations of antimalarial compounds at Mount Holyoke for the government. The Garvan medal was established in 1938 after the death of Mr. Garvan, philanthropist and lawyer, noted for his contributions for the advancement of chemistry.

MICHIGAN

State Medical Meeting.—The eighty-second annual session of the Michigan State Medical Society will be held at the Pantlind Hotel, Grand Rapids, September 23-26, under the presidency of Dr. William A. Hyland, Grand Rapids. Seven general assemblies, twelve section meetings and twenty-three discussion conferences are on the program. The out of state speakers include:

Allen O. Whipple, New York, Early Diagnosis of Pancreatic and Ampullary Growths, with an Evaluation of Surgical Therapy.
Andrew C. Ivy, Chicago, Diagnosis of Jaundice from a Therapeutic Point of View.
Wendell G. Scott, St. Louis, Investigation of Low Back Pain by Radiographic Methods.
Louis Schwartz, Washington, D. C., Diagnosis, Prevention and Treatment of Occupational Dermatitis.
Clifford B. Lull, Philadelphia, Changes and Improvements in Obstetric Practice During the Past Twenty-Five Years.
Frederic E. B. Foley, St. Paul, The Part of the General Practitioner in the Management of Vesical Neck Obstruction.
Harry Gold, New York, Management of the Failing Heart.
Russell L. Cecil, New York, Chronic Arthritis.
George M. Curtis, Columbus, Ohio, Surgery of the Spleen.
Alex D. Campbell, Montreal, Certain Aspects of Vaginal Surgery.
John R. Lindsay, Chicago, Vertigo: Differential Diagnosis and Treatment.
Ralph V. Platou, New Orleans, The Tuberculous Child.
Reynold A. Jensen, Minneapolis, The Doctor and the Child.
Claude F. Dixon, Rochester, Minn., Carcinoma of the Colon and Its Management.
Robert H. Williams, Boston, Comparison of Clinical and Physical Methods of Treating Thyrotoxicosis.
Cecil S. O'Brien, Iowa City, Senile Cataract from the Standpoint of the General Practitioner.
Frank E. Whitacre, Memphis, Tenn., Diagnosis and Treatment of Ectopic Pregnancy.
Michael E. DeBakey, New Orleans, Therapeutic Application of Hemometacinesis in Peripheral Vascular Disturbances.
Paul A. O'Leary, Rochester, Minn., Penicillin in Treatment of Syphilis in General Practice.
L. Emmett Holt Jr., New York, Treatment of Infantile Diarrhea.
Russell L. Haden, Cleveland, Gout.
Joseph D. Aronson, Philadelphia, BCG Vaccine in the Control of Tuberculosis.
Stuart W. Harrington, Rochester, Minn., Cancer of Breast.
Clement A. Smith, Boston, Potentialities and Limitations of Prenatal Pediatrics.
Alan R. Moritz, Boston, Medical-Legal Pathology.
W. Wayne Babcock, Philadelphia, Closure of Abdominal Fistula.
Wallace E. Herrell, Rochester, Minn., Present Status of Sulfonamide and Antibiotic Therapy.

The Women's Auxiliary will present a social and business program at the time of the scientific sessions.

Annual Meeting of Society for Crippled Children.—The Michigan Society for Crippled Children and Adults, Inc., will hold its sixth annual meeting in Marquette, August 10-11. Among the speakers will be Dr. Meyer A. Perlstein, director of the therapeutic nursery in Michael Reese Hospital, Chicago, who will lecture on the medical aspects of cerebral palsy and hold a demonstration clinic; Dr. L. Fernald Foster, Bay City, who will lecture on the Michigan rheumatic fever and cardiac program, and Dr. Moses Cooperstock, Marquette, who will speak on rheumatic fever.

NEW JERSEY

Personal.—Dr. Edward Guion, Northfield, has retired as superintendent and medical director of the board of free holders of Atlantic County Hospital for Mental Diseases, and Atlantic County Hospital (Alms House). Dr. Guion, who was honored at testimonial dinners by both hospitals, will resume the private practice of psychiatry in Pleasantville and will retain his membership on the psychiatric staffs of the Atlantic City Hospital and Atlantic County Hospital for Tuberculous Diseases, Northfield.

Physicians' Post Organized.—Formation of a physicians' post (445) of the American Legion, limited to members of the medical profession and reported to be one of the few units in the country, will be established September 27. Membership is opened to any American physician regardless of creed, race or color who had active duty in the army, navy or public health service during either world war and who was honorably separated from the service. The temporary commander is Dr. Ulysses M. Frank, Newark.

NEW YORK

Appointed Health Officer.—Dr. Frank E. Coughlin, Troy, temporarily serving as Rensselaer County chief medical officer, has been named permanent county commissioner of health to serve six years, effective June 1. Dr. Coughlin since last November has been in charge of the organization of the county health bureau under which the health service of Troy, Rensselaer, Hoosick Falls and various communities in the county were merged into a single county health bureau. This bureau has served as a pattern for other New York State counties which have inaugurated similar programs. Dr. Coughlin served as state district health officer prior to his temporary appointment and had been granted a year's leave of absence to organize the county health bureau. He resigned from the state health department to assume his new duties.

Postgraduate Instruction. — The Council Committee of Public Health and Education of the Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged the following postgraduate courses for the Orange County Medical Society at the court house in Goshen at 8:30 p. m.:

September 9: Dr. Paul Reznikoff, associate professor of clinical medicine, Cornell University Medical College, New York, "Diagnosis and Treatment of Anemia."
September 30: Dr. Kurt Lange, assistant clinical professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, New York, "Peripheral Vascular Diseases."
November 11: Dr. Edward F. Hartung, assistant clinical professor of medicine, Columbia University College of Physicians and Surgeons, New York, "Diagnosis and Treatment of Low Back Pain from the General Practitioner's Point of View."

New York City

Antiragweed Drive.—The city health department's antiragweed drive for the relief of hay fever sufferers will continue until mid-August. Ragweed is being sprayed with the chemical which destroys it before it gets to the pollen bearing stage. An unusually heavy growth has been reported this year in areas that were unsprayed last season. This year over 1,000 acres of ragweed has been destroyed in this way by the department of sanitation, the parks department and the health department.

New Research Laboratory.—Mutual Life Insurance Company of New York has agreed to finance the construction of a new $3,000,000 laboratory for the Sterling Winthrop Research Institute at East Greenbush, which will be leased back to Sterling Drug Company for thirty years with the tenant having the privilege of renewing the lease for six successive terms of ten years each. The four story laboratory will be divided into wings for chemical and biologic research and for administration and a library. The research wings will contain individual laboratory units, rooms for photography, x-ray and extreme temperature testing, as well as a pilot development plant. Dr. Maurice L. Tainter, Albany, director of the institute, said that the new laboratories will extend research into penicillin-like compounds, antibiotics, sulfonamide drugs, antimalarials, veterinary products, barbiturates, amino acids, streptomycin and other therapeutic preparations. Tropical medicine will be emphasized.

New Department of Psychiatry.—An independent department of psychiatry under the direction of Dr. Howard W. Potter has been announced by Long Island College of Medicine. The college announced also the appointment of Dr. Robert F. Barber, professor of clinical surgery since 1931, as emeritus professor. Heretofore the teaching of psychiatry has been conducted in cooperation with neurology. Dr. Potter received his medical degree from Columbia University College of Physicians and Surgeons, 1913. After serving in hospitals in New Jersey and New York he became director of research at the Letchworth Foundation, Thiells, in 1921 and was assistant director, New York State Psychiatric Institute and Hospital, from 1929 to 1934; also clinical professor of psychiatry at Columbia University College of Physicians and Surgeons and more recently professor of clinical psychiatry at Long Island College of Medicine. He was president of the American Association on Mental Deficiency in 1934.

Columbia to Provide Training in Rural Medicine.—The affiliation, effective at once, between Columbia University College of Physicians and Surgeons and the Mary Imogene Bassett Hospital in Cooperstown has been announced. Columbia expects to "contribute to the problem of training physicians for medical practice in small and rural communities and for better distribution of positions." The affiliation will "strengthen further the professional activities of the hospital through a stimulation and development of the professional staff in relation to undergraduate medical instruction and the training of interns and hospital residents." Facilities will be made available at the hospital for undergraduate medical education of students of the university.

OHIO

Dr. Porterfield Appointed State Health Director.—Dr. John D. Porterfield III, Columbus, has been appointed state health director, succeeding Dr. Roger Heering, Columbus (THE JOURNAL, July 5, p. 908). Dr. Porterfield, a graduate of Rush Medical College, Chicago, 1938, has been with the U. S. Public Health Service.

Appoint Director of Anesthesia.—Dr. Jacob J. Jacoby has been appointed associate professor of surgery and director of the division of anesthesia at the Starling-Loving University Hospital, Ohio State University, Columbus. Dr. Jacoby graduated in medicine at the University of Minnesota and has been serving as a research associate and assistant professor in anesthesia at the University of Chicago, where he has just received the degree of doctor of philosophy in pharmacology and anesthesia. He succeeds Dr. Norris E. Lenahan, who resigned April 30.

Drs. Culler and Barnes Appointed Department Heads.—Dr. Arthur M. Culler, member of the ophthalmology department of Ohio State University College of Medicine, Columbus, has been appointed chairman of the department, succeeding the late Dr. Albert D. Frost, who died Nov. 15, 1945. Dr. Culler received his medical degree at the University of Michigan Medical School, Ann Arbor, 1926, where he served as an instructor in ophthalmology from 1928 to 1930. Dr. Allan C. Barnes has been appointed head of the department of obstetrics and gynecology, succeeding Dr. Philip J. Reel, who has been acting part time chairman of the department. Dr. Barnes, who has been associate professor of obstetrics and gynecology for the past two years, received his medical degree at the University of Pennsylvania School of Medicine, Philadelphia, 1937, and his master's degree in obstetrics and gynecology from the University of Michigan Graduate School, Ann Arbor. Prior to entering the army in 1942 he was an instructor at the University of Michigan Medical School.

PENNSYLVANIA

Hospital Survey and Construction Division.—The governor signed legislation establishing a new Division of Hospital Survey and Construction in the State Department of Welfare July 7, thus opening the way for Pennsylvania's participation in the federal hospital improvement program. As in various other states, the agency is authorized to inventory existing hospitals, to survey the need for construction of new health facilities and to develop and administer a state plan for the construction of public and other nonprofit hospitals.

Philadelphia

Research on Poliomyelitis.—A grant of $106,000 to the University of Pennsylvania for a five year study of infantile paralysis has been made by the National Foundation for Infantile Paralysis. Detlev W. Bronk, Ph.D., director of the university's Johnson Research Foundation, will direct the research, which will investigate the metabolic process of nerve cells and how they are modified by the infantile paralysis virus. He will be assisted by Martin Larrabee, Ph.D., Frank Brink Jr., Ph.D., Thomas F. Anderson, Ph.D., and Philip W. Davies.

Pennsylvania Reorganizes Department of Medicine.—The University of Pennsylvania School of Medicine has announced a reorganization of its department of medicine and the appointment of a new department head. Dr. Francis C. Wood, Philadelphia, formerly assistant professor in medicine, is the new department head, succeeding Dr. O. H. Perry Pepper, Philadelphia, who wished to be relieved of administrative duties. Dr. Pepper has served the department for more than thirty years and will continue to teach and practice in the University Hospital until his retirement. Dr. Wood has been associated with the School of Medicine and Hospital since his graduation in 1926. During World War II he served in the Twentieth General Hospital. Drs. T. Grier Miller, Truman G. Schnabel and Charles C. Wolferth were named to full professorships in medicine. Dr. Miller, a graduate of the University of Pennsylvania School of Medicine, Philadelphia, 1911, is president of the Philadelphia County Medical Society. Dr. Schnabel, a graduate of the university in 1911, has been professor of clinical medicine and head of the university's teaching in medicine at the Philadelphia General Hospital. Dr. Wolferth, who graduated in 1912, is president of the Edward B. Robinette Foundation.

TENNESSEE

State Medical Election.—At the annual meeting of the Tennessee State Medical Association last April Drs. Franklin B. Bogart, Chattanooga, became president, Harley W. Qualls, Memphis, was made president-elect and William M. Hardy, Nashville, secretary-editor.

Dr. Aycock Returns to Tennessee.—Dr. George F. Aycock, after thirty years with the Army Medical Corps, has returned to his native state to take up the direction of the tuberculosis program at the University of Tennessee Hospital, Knoxville. The expanded tuberculosis program primarily will benefit the 7,500 students attending the University of Tennessee. Dr. Aycock recently retired from the Medical Corps as a colonel after many years of work in tuberculosis and diseases of the chest.

WEST VIRGINIA

New Superintendent of State Hospital.—Dr. Edward F. Reaser, Huntington, has been appointed superintendent of Huntington State Hospital, effective August 1, to succeed Dr. Charles T. Taylor, who has served as superintendent since 1933. Dr. Reaser is chief psychiatrist in charge of the mental hygiene clinic at the Veterans Administration regional office in Huntington. Previously he was assistant superintendent at Huntington State Hospital, resigning in November 1947 to accept the position with the Veterans Administration. A native of Glenville, he graduated at the Medical College of Virginia, Richmond, in 1930 and was on the medical staff at Pilgrim State Hospital, Brentwood, N. Y., when appointed assistant superintendent at the Huntington institution. He is a specialist certified by the American Board of Psychiatry and Neurology and a member of the American Psychiatric Association and the Medical Society of St. Elizabeth's Hospital.

WISCONSIN

Dr. Bowman Retires.—Dr. Frank F. Bowman on May 1 retired as health officer of the city of Madison, a position he has held for nineteen years. He was honored at a farewell dinner given by present and former employees of the city health department. Dr. Bowman, who is 74 years old, is a graduate of Rush Medical College, Chicago, 1897.

Symposium on Use of Isotopes.—The University of Wisconsin, Madison, will sponsor a symposium on the biologic applications of isotopes, September 10-13. The program includes:

David B. Sprinson, New York, Studies on Metabolism of Proteins.
Harland G. Wood, Ph.D., Cleveland, Studies on Metabolism of Carbohydrates.
Dr. Joseph G. Hamilton, San Francisco, Application of Tracer Research to Medicine.
Dr. Byron E. Hall, Rochester, Minn., Leukemia and Polycythemia.
Dr. Saul Hertz, Boston, Thyroid Disease.
William F. Bale, Ph.D., Rochester, N. Y., Health Hazards Involved in the Use of Radioactive Isotopes.

A panel discussion on Cancer will be held with Drs. Austin M. Brues, Chicago, Joseph G. Hamilton, San Francisco, Simeon T. Cantril, Seattle, and Paul S. Henshaw, Ph.D., Oak Ridge, Tenn., participating. Housing and meals will be provided at a cost of $5 a person daily. Reservations can be made and additional information obtained from Dr. Edwin C. Albright, Department of Medicine, 1300 University Avenue, Madison 6.

GENERAL

Scientists Go to Japan to Aid Research Plans.—The National Research Council has sent a group of American scientists to Japan to advise General Douglas MacArthur's staff on the democratization of scientific research. The group will consider plans submitted by Japanese scientific societies and make recommendations to the economic and scientific section of general headquarters in Tokyo. Led by Roger Adams, Ph.D., head of the department of chemistry, University of Illinois, other group members are Merrill K. Bennett, Ph.D., Stanford University, Palo Alto, Calif.; Dr. William D. Coolidge, director emeritus of research of the General Electric Company; William V. Houston, Ph.D., president of Rice Institute, Houston, Texas; William J. Robbins, Ph.D., director of the New York Botanical Garden, and Royal W. Sorensen, Sc.D., of the California Institute of Technology, Pasadena, Calif.

Research Fellowships Available.—The American College of Physicians announces that a limited number of fellowships in medicine will be available from July 1, 1948 to June 30, 1949 designed to provide an opportunity for research training either in the basic medical sciences or in the application of these sciences to clinical investigation. They are for the benefit of physicians who are in the early stages of their preparation for a teaching and investigative career in internal medicine. Assurance must be provided that the applicant will be acceptable in the laboratory or clinic of his choice and that he will be provided with the facilities necessary for the proper pursuit of his work. The stipend will be from $2,200 to $3,000. Application forms will be supplied on request to the American College of Physicians, 4200 Pine Street, Philadelphia 4, and must be submitted in duplicate not later than November 1. The American College of Physicians has announced its twenty-ninth annual session to be held in San Francisco, April 19-23, 1948 at the Civic Auditorium.

Graduate Course in Chest Diseases. — The American College of Chest Physicians is sponsoring a second annual postgraduate course in diseases of the chest to be held during the week of September 15-20 at the Municipal Tuberculosis Sanitarium, Chicago. The emphasis in this course, limited to thirty physicians, will be placed on the newer developments in diagnosis and treatment of diseases of the chest. Further information may be secured from the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10.

American Congress on Obstetrics and Gynecology.—The third American Congress on Obstetrics and Gynecology will be held in St. Louis September 8-12 at the Municipal Auditorium. There will be a series of round table and panel discussions. The leaders of the discussions will be:

John L. Parks, Washington, D. C., Etiology of Abortion.
Ralph A. Reis, Chicago, Emotional Problems in Obstetrics and Gynecology.
Harold O. Jones, Chicago, Uterine Prolapse.
Samuel A. Cosgrove, Jersey City, N. J., Decentralization of Nurseries.
John Rock, Boston, Ovulation.
F. Bayard Carter, Durham, N. C., Prolonged Labor.
Joseph A. Hardy Jr., St. Louis, Treatment of Abortion.
Robert A. Kimbrough Jr., Philadelphia, chairman of panel on Cancer.
Emil Novak, Baltimore, Ovarian Tumors.
John I. Brewer, Chicago, Uterine Bleeding.
Raphael Kurzrok, New York, The Menopause.
Duncan E. Reid, Boston, Prolonged Labor.
Joseph L. Baer, Chicago, Work of Maternal Welfare Committees in the Larger Cities.
Newell W. Philpott, Montreal, Erythroblastosis.
Abraham F. Lash, Chicago, Geriatric Gynecology.
Edward D. Allen, Chicago, Endometriosis.
John M. Waugh, Rochester, Minn., Genital Relaxation:
Philip F. Williams, Philadelphia, Nutrition in Pregnancy.
William F. Mengert, Dallas, Texas, Prolonged Labor.
Edward A. Schumann, Philadelphia, chairman, panel on Cesarean Section.

Appointed to Secretariat of World Health Organization.—Two physicians have been added to the secretariat of the World Health Organization Interim Commission's headquarters office, New York City. Dr. William P. Forrest, D.P.H., has been appointed assistant director of the headquarters office and Dr. Chang K. Chu assistant director of the field services for China. Dr. Forrest was born in Glasgow, Scotland, and attended the Anderson College of Medicine and St. Mungo College of Medicine at Glasgow, the Royal College of Surgeons in Edinburgh and the University of Glasgow. He was chief medical officer with the United Nations Relief and Rehabilitation Administration's mission to the Ukrainian Soviet Socialist Republic. For two years he was medical officer of health and director of casualty services for the Notts County Council and the Mansfield and Warsop councils in England. Dr. Chu was born at Chekiang, China, and received his M.D. degree from the Peking Union Medical College and a degree of doctor of public health from Yale University Medical School. He has served as commissioner of the Kweichew Provincial Health Administration, director of the Public Health Personnel Training Institute at Chungking, China, and director of the National Institute of Health, Nanking, China. Dr. Chu was granted one year's leave from his post as director of the Chinese National Institute of Health to work with WHO.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

Division and State	Week Ended			Total to		Total *	
	July 26, 1947	July 27, 1946	Median, 1942-1946	July 26, 1947	July 27, 1946	March 16-July 26, 1947	March 17-July 27, 1946
New England.							
Maine	0	0	0	7	3	4	3
New Hampshire	0	8	1	5	27	1	26
Vermont	1	0	0	9	9	1	5
Massachusetts	3	4	4	19	12	12	8
Rhode Island	0	0	0	13	0	12	0
Connecticut	0	6	6	10	29	7	21
Middle Atlantic:							
New York	15	30	30	125	180	89	147
New Jersey	8	5	5	30	40	24	34
Pennsylvania	9	11	11	49	53	35	41
East North Central:							
Ohio	10	38	14	56	111	46	96
Indiana	0	11	2	25	37	9	32
Illinois	9	66	12	78	210	56	202
Michigan	5	13	8	48	47	24	39
Wisconsin	0	18	1	26	42	2	29
West North Central:							
Minnesota	5	188	2	40	366	27	365
Iowa	2	17	2	27	73	19	64
Missouri	2	38	2	35	121	25	114
North Dakota	1	11	0	21	18	16	18
South Dakota	0	5	0	2	24	0	24
Nebraska	13	32	1	46	71	39	70
Kansas	6	36	9	29	126	11	122
South Atlantic:							
Delaware	4	1	0	5	2	5	2
Maryland	3	6	6	18	17	12	15
District of Columbia	0	0	0	3	2	1	1
Virginia	1	6	6	27	23	17	17
West Virginia	2	2	2	9	15	5	12
North Carolina	3	1	2	31†	42	16	35
South Carolina	1	1	2	9	15	8	12
Georgia	1	15	4	27	66	20	58
Florida	0	20	3	53	382	28	333
East South Central:							
Kentucky	2	4	11	17	40	16	37
Tennessee	10	6	10	34	29	22	20
Alabama	0	17	9	24	186	11	183
Mississippi	1	25	1	23	95	6	78
West South Central:							
Arkansas	2	18	6	27	91	17	79
Louisiana	3	18	6	38	149	20	130
Oklahoma	2	33	12	23	103	12	97
Texas	10	52	40	97	504	72	476
Mountain:							
Montana	0	3	1	4	35	2	19
Idaho	5	1	0	25†	3	15	3
Wyoming	0	4	0	6	14	3	13
Colorado	3	48	1	22	226	17	225
New Mexico	3	6	1	9	34	6	33
Arizona	1	9	1	13	29	10	26
Utah	0	5	3	6	18	1	12
Nevada	0	0	0	0	0	0	0
Pacific:							
Washington	2	11	2	30	76	22	43
Oregon	3	9	4	17	20	12	16
California	16	52	21	439	351	290	264
Total	167	910	...	1,736†	4,166†	1,125	3,699
Median, 1942-1946	...	...	391	2,439		2,042	

* Last two columns show reported incidence since approximate seasona low week (week ended between March 15 and 21).
† Figures changed by corrected reports.

Marriages

E. Ross Jenney, Hollywood, Calif., to Mrs. Katalin Prohaszka of Budapest, Hungary, in Geneva, Switzerland, April 9.

Leldon W. Martin, Sebring, Fla., to Miss Clara Sheperd of Fairmount, Ga., in Miami April 27.

Clifford James Tichenor, Washington, D. C., to Miss Irene Mathilda Kruka at Cincinnati June 7.

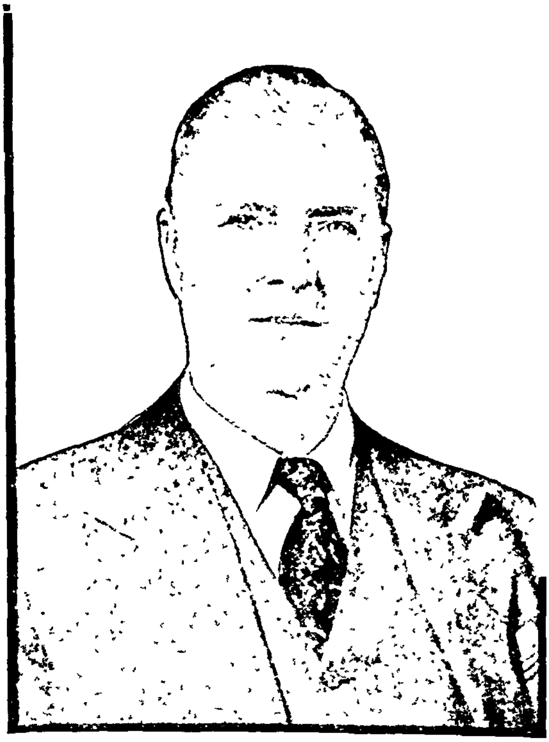
Harold M. Jesurun to Miss Lolin Lopez Pinero, both of San Juan, Puerto Rico, May 17.

Willard Ellsworth to Miss Margaret McQueeney, both of New York, Dec. 28, 1946.

Golda Fischer, San Francisco, to Professor M. A. Joslyn of Berkeley, Calif., April 20.

Deaths

Charles Wesley Roberts ⊕ Atlanta, Ga., a member of the Board of Trustees of the American Medical Association, died July 28, aged 63. Dr. Roberts was born in Nicholls, Ga., Dec. 13, 1883, and graduated at the University of Maryland School of Medicine, Baltimore, in 1906. He received a certificate of honor for his excellence in the examinations for his medical degree and later served as resident surgeon at the University Hospital. Dr. Roberts began practicing medicine at Douglas, Ga., in 1908, where from 1911 to 1916 he operated a private hospital. On Jan. 1, 1917 he opened an office in Atlanta, where he was an instructor in surgery at Emory University School of Medicine from 1918 to 1920 and then was appointed associate in surgery, serving until 1945. He had long been active in the work of the American Medical Association, serving as a member of the House of Delegates from 1925 to 1928 and again from 1932 to 1941, and as a member of the Council on Industrial Health from 1937 to 1941, in which year he was elected a member of the Board of Trustees of the Association. In 1946 he was reelected to the Board for a second term of five years, and at the recent Atlantic City session he was appointed a member of the Executive Committee of the Board of Trustees. Dr. Roberts was formerly chairman of the section on industrial health of the Southern Medical Association, a past president of the Eleventh District Medical Society, the Chattahoochee Valley Medical Association and the Southeastern Surgical Congress. He was a member of the advisory council of the Georgia State Board of Health, medical adviser of the Industrial Commission of Georgia from 1921 to 1938 and in 1946 was appointed a member of the State Hospital Advisory Committee. He was a fellow of the American Association of Industrial Physicians and Surgeons and the American College of Surgeons, an attending surgeon at the Georgia Baptist, Crawford W. Long Memorial and Grady hospitals, and was a member of the Atlanta Kiwanis Club from 1921 to 1938. Dr. Roberts contributed much to the surgical literature and at the time of his death was a member of the advisory editorial board of the *Southern Surgeon.*



Charles Wesley Roberts
1883-1947

Francis Edward Harrington ⊕ Minneapolis; born in Norfolk, Va., June 19, 1879; George Washington University School of Medicine, Washington, D. C., 1904; clinical professor of preventive medicine and public health at the University of Minnesota Medical School; served as city health commissioner, member of the Hennepin County Sanatorium Commission, director of hygiene of Minneapolis schools and secretary-treasurer of the International Society of Medical Health Officers; formerly affiliated with the U. S. Public Health Service; at one time medical inspector of the District of Columbia, health officer of Cumberland, Md., and Jefferson County, Ala.; past president of the Minnesota Trudeau Medical Society and the Minnesota Public Health Association and third vice president of the American Public Health Association; fellow of the American College of Physicians; founder and director of the Lymanhurst Health Center; served as acting superintendent of the Minneapolis General Hospital; awarded honorary degree of doctor of laws by Gonzaga College; died in West Palm Beach, Fla., May 9, aged 67, of cerebral infarct and pulmonary edema.

William Robert Thompson, Fort Worth, Texas; born in Perdue Hill, Ala., Dec. 24, 1862; College of Physicians and Surgeons, Baltimore, 1888; member of the American Medical Association; fellow of the American College of Surgeons; past president of the Texas Ophthalmological and Otolaryngological Society and the Tarrant County Medical Society; member emeritus and member of the original board of trustees of t State Medical Association of Texas, serving as secretary of t board for thirty-seven years; at one time associate profess of diseases of the eye, ear, nose and throat, dean and profess of ophthalmology at the Fort Worth School of Medicine; f many years city councilman; mayor pro tem from 1933 to 193 chairman of the board from 1922 to 1927 at the City-Cour hospital, where he served as consultant to the staff; memb at one time vice chairman and later president of the staff St. Joseph's Hospital; oculist and aurist of the Texas a Pacific, Southern Pacific, Rock Island, Santa Fe, Missou Pacific and Fort Worth and Denver Railroads from 1900 1940; died May 1, aged 84, as the result of a fall.

James Pedersen ⊕ New York; born in New York Aug. 1 1864; College of Physicians and Surgeons, medical departme of Columbia College, New York, 1890; an Affiliate Fellow the American Medical Association; specialist certified by t American Board of Urology; member of the American Ass ciation of Genito-Urinary Surgeons, serving at one time president, and the American Urological Association; served associate professor of urology at the New York Post-Gradua Medical School and Hospital; instructor in genitourinary su gery at the University and Bell vue Hospital Medical College a professor of venereal diseases the University of Vermont Co lege of Medicine in Burlingto consulting genitourinary surge at the Englewood (N. J.) Ho pital and the Stamford (Conn Hospital; died in Wilton May 1 aged 82, of heart disease.

Arthur John Lomas, Balt more; born Sept. 17, 1879; M Gill University Faculty of Med cine, Montreal, Que., Canad 1902; served with the Roy Army Medical Corps and France with the Canadian Arm Medical Corps during Worl War I; during World War executive director of the eme gency medical service in t civilian defense system; served a surgeon in the U S. Publ Health Service reserve; at on time assistant director of th Johns Hopkins Hospital in Balt more and director of the Univer sity Hospital at Iowa City; fo sixteen years superintendent the University Hospital; adminis trative consultant to five Catholi hospitals in Maryland: Mercy St. Joseph's, Bon Secours and S Agnes hospitals, all of Baltimore and the Allegany Hospital Cumberland; died at his home Lutherville, Md., May 17, aged 6

Curtis Alban Evans ⊕ Mil waukee; born in 1879; Universit of Michigan Department of Medi cine and Surgery, Ann Arbo 1904; formerly professor of anatomy at the Wisconsin Colleg of Physicians and Surgeons; past president of the Milwauke Academy of Medicine; member of the Milwaukee Surgica Society; served in France during World War I; fellow of th American College of Surgeons; member of the founders grou of the American Board of Surgery; on the surgical staff o the Columbia Hospital; consulting surgeon, Johnston Emergenc and Children's hospitals; for many years chief of staff of th Milwaukee Hospital, where he died May 3, aged 68, of hear disease.

William Calvin Crowell Jr., Maysville, Ky.; born in Mays ville, Feb. 2, 1917; University of Louisville School of Medicin in Louisville, Ky., in 1943; interned at the Louisville Genera Hospital; began active duty as a first lieutenant in the medica corps, Army of the United States, in January 1944; his tou of active duty included surgical service in general, statio and evacuation hospitals in this country and the Europea theater of operations; engaged in two major campaigns, th Battle of Central Europe and the Battle of Rhineland; release from active duty in July 1946 with the rank of captain; kille in an automobile accident Nov. 14, 1946, aged 29.

James Lee Wilson ⊕ South Bend, Ind.; born in Janes ville, Ill., Aug. 16, 1885; Rush Medical College, Chicago, 1912 fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; member of the American Association for the Study of Goiter; president of the park board; member of the advisory board and executive staff at St. Joseph Hospital; surgeon for the Childrens Dispensary and Hospital Association; chief of the surgical staff, member of the board of directors, advisory board and executive staff, Memorial Hospital, where he died May 11, aged 61, of coronary occlusion.

James Linn Adams, Van Nuys, Calif.; Missouri Medical College, St. Louis, 1886; died March 18, aged 87.

Sanford Bailey ⊕ Garden City, Kan.; Kentucky School of Medicine, Louisville, 1893; on the staff of St. Catherine's Hospital, where he died April 28, aged 75, of carcinoma of the pancreas.

William Dewey Balfour, Wailuku, Hawaii; Washington University School of Medicine, St. Louis, 1927; member of the American Medical Association; formerly vice president of the Territorial Association of Plantation Physicians; captain, National Guard, not on active duty; died April 13, aged 48.

Rose Anne Bebb ⊕ New York; University of Minnesota College of Medicine and Surgery, Minneapolis, 1897; affiliated with the Bellevue Hospital; died April 16.

Plumb Brown, Springfield, Mass.; the Hahnemann Medical College and Hospital, Chicago, 1892; died April 28, aged 78, of carcinoma of the intestine with metastasis.

Edwin Bunnell, Willows, Calif.; Medical Department of the University of California, San Francisco, 1894; died in the Woodland (Calif.) Clinic Hospital April 26, aged 77, of carcinoma of the right lung.

John Rollo Burr, South Bend, Ind.; Chicago Homeopathic Medical College, 1897; died in the Memorial Hospital April 4, aged 73, of cerebral hemorrhage and sarcoma of the rectum.

Russell Williams Chidsey, New Holland, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1890; served during the Spanish-American War; found dead April 25, aged 78.

Frances Cohen ⊕ New York; Cornell University Medical College, New York, 1900; formerly assistant director of educational hygiene for the city board of education and pediatrician in the department of health; served in the pediatric division of the Mount Sinai Hospital; died April 18, aged 73.

Ovee John Colwick, Durant, Okla.; Southwestern University Medical College, Dallas, Texas, 1906; member of the American Medical Association; died April 2, aged 66, of heart disease.

Max Davis, Boston; Harvard Medical School, Boston, 1925; diplomate of the National Board of Medical Examiners; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; assistant professor of gynecology and obstetrics at the Boston University School of Medicine; on the staffs of the Massachusetts Memorial and Beth Israel hospitals; died in Cambridge April 30, aged 46, of rheumatic heart disease.

Charles A. Dawson, Minden, Texas; Louisville (Ky.) Medical College, 1891; member of the American Medical Association; affiliated with the Henderson Memorial Hospital in Henderson; died April 26, aged 79, of diabetes mellitus.

Pasquale De Feo, Medford, Mass. (licensed in Massachusetts in 1905); died April 19, aged 72, of uremia.

Dell S. Edwards, Covington, Ky.; Woman's Medical College of Cincinnati, 1895; died April 24, aged 90, of heart disease.

Carl Hernfrid Fornell ⊕ New York; Harvard Medical School, Boston, 1914; specialist certified by the American Board of Otolaryngology; served during World War I; formerly medical director of the Hartford Accident and Indemnity Company; on the staff of the Manhattan Eye, Ear, Nose and Throat Hospital; died May 7, aged 60.

Joseph Foster ⊕ Santa Fe, N. M.; Western Pennsylvania Medical College, Pittsburgh, 1901; died April 21, aged 73, of carcinoma.

Charles Frederick Frankman, Greenville, Ohio; University of Michigan Medical School, Ann Arbor, 1928; affiliated with the Wayne Hospital; died April 25, aged 43, when struck by a train.

Maude Granger Furniss, Brookline, Mass.; Boston University School of Medicine, 1897; died April 14, aged 73, of chronic myocarditis.

Malcolm Brown Fyfe, Valparaiso, Ind.; Northwestern University Medical School, Chicago, 1903; member of the American Medical Association; served overseas during World War I; school physician at Valparaiso University; member of the city board of health; on the staff of the Porter Memorial Hospital; died May 11, aged 71, of rupture of an abdominal aneurysm.

Frederick Arthur Grossman, Wilmette, Ill.; Northwestern University Medical College, Chicago, 1897; served in the Coast Guard during World War I; died in the Illinois Central Hospital, Chicago, May 16, aged 76, of a hip fracture received in a fall.

William Hipp, Detroit; Detroit College of Medicine, 1906; member of the American Medical Association; died May 2, aged 69.

Arnold James Gelarie ⊕ Ossining, N. Y.; Thüringische Landesuniversität Medizinische Fakultät, Jena, Thuringia, Germany, 1910; member of the American Public Health Association and the American Association for the Advancement of Science and others; at one time bacteriologist with the public health service at the U. S. Quarantine Station, Port of New York; died May 7, aged 61.

Earl Ray Gibbs ⊕ Wilkinson, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; served during World War I; died in the Methodist Hospital, Indianapolis, May 13, aged 66, of carcinoma of the breast with metastases to the lung.

Jacob Benjamin Ginsburg, Boston; College of Physicians and Surgeons, Boston, 1920; died April 30, aged 65, of coronary occlusion.

Duke Marvin Godbey, Perryville, Ky.; Hospital College of Medicine, Louisville, 1905; member of the American Medical Association; died May 5, aged 68, of cerebral hemorrhage.

Orren Pakenham Goodwin, Ruston, La.; born in Longstaw, La., Nov. 18, 1881; Baylor University College of Medicine, Dallas, 1913; formerly affiliated with the Indian Service; served overseas during World War I; lieutenant colonel, medical reserve corps, not on active duty; served on the staffs of Veterans Administration hospitals in various places; formerly on the staffs of the State Hospital in Pineville and State Hospital in Little Rock; died in the Veterans Administration Hospital in Alexandria, April 26, aged 65, of heart disease.

John Monroe Gray, Joplin, Mo.; St. Louis College of Physicians and Surgeons, 1899; member of the American Medical Association; Spanish-American War veteran; on the staffs of St. John's and Freeman hospitals; died May 2, aged 73, of chronic myocarditis.

Angelina G. Hamilton, Anna, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1897; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908; affiliated with the Anna State Hospital; died in Port Huron, Mich., April 30, aged 74, of coronary thrombosis.

John E. Hetherington ⊕ Grand Forks, N. D.; Jefferson Medical College of Philadelphia, 1909; served as a member of the state medical board; on the staff of the Deaconess Hospital; died May 9, aged 62, of arteriosclerosis and cardiac failure.

Frank Wheeler Hornbrook, Chevy Chase, Md.; Harvard Medical School, Boston, 1905; died May 2, aged 71.

Coit Inge Hughes, Phoenix, Ariz.; University of Louisville (Ky.) Medical Department, 1909; also a graduate in pharmacy; formerly secretary and superintendent of public health of Arizona; served during World War I, as county health officer and as a member of the state board of medical examiners; died May 4, aged 65.

Nicholas John Jackson, Joliet, Ill.; Jenner Medical College, Chicago, 1910; died May 7, aged 77, of carcinoma of the rectum.

Walker Allen Johnson, Orange, N. J.; Howard University College of Medicine, Washington, D. C., 1912; served during World War I; died May 7, aged 67.

William F. Johnson, Sebastopol, Miss. (licensed in Mississippi in 1907); died May 6, aged 73, of cerebral hemorrhage.

William P. Kelly ⊕ Pittsfield, Mass.; Albany (N. Y.) Medical College, 1892; chairman of the school board; affiliated with St. Luke's Hospital, Hillcrest Hospital and House of Mercy; died April 25, aged 76, of heart disease.

Earl Warren Keyes, Cleveland; University of Wooster Medical Department, Cleveland, 1908; medical examiner for the Prudential Life Insurance Company; died May 9, aged 64.

Richard Glenn Kibbey, New Hartford, N. Y.; Syracuse University College of Medicine, 1907; member of the American Medical Association and the American Society of Anesthetists; on the staffs of the Marcy (N. Y.) Hospital, Masonic Soldiers and Sailors Memorial Hospital and St. Luke's Home and Hospital in Utica, where he died May 6, aged 64, of embolism.

Jerome J. Klein ⊕ St. Albans, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1937; diplomate of the National Board of Medical Examiners; interned at Easton (Pa.) Hospital; died April 19, aged 34.

Charles Edward Klontz ⊕ Cherry Valley, Ill.; Northwestern University Medical School, Chicago, 1905; on the staff of St. Anthony Hospital in Rockford, where he died May 13, aged 67.

Kate Krieger, Cincinnati; Cincinnati College of Medicine and Surgery, 1898; also a pharmacist; died April 26, aged 84, of senility.

Jesse L. Lambert, Franklin, W. Va. (licensed in West Virginia in 1895); served as mayor of Franklin, health officer and on the county school board; died in the Rockingham Memorial Hospital in Harrisonburg, Va., May 14, aged 76, of diabetes mellitus.

Charles Henry Lamon, New Kensington, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1929; on the staff of the Citizens General Hospital, where he died May 3, aged 43, of pneumonia and heart disease.

Ezra Cornell Lawrence, Los Angeles; Drake University Medical Department, Des Moines, 1891; member of the American Medical Association; died May 3, aged 85.

Edward Burton Lehman, New Haven, Conn.; University of Tennessee College of Medicine, Memphis, 1928; member of the American Medical Association; died in the Grace Hospital March 30, aged 46.

James Buchan Littlejohn, Chicago; University of Glasgow Medical Faculty, Scotland, 1892; College of Medicine and Surgery, Chicago, 1905; died May 21, aged 78.

George David Lowry, Hooker, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; died May 4, aged 84.

Ransom Wight Luce, Grand Rapids, Mich.; Detroit College of Medicine, 1906; died May 2, aged 66, of influenza followed by uremia.

George Roscoe Luton ⊕ Santa Barbara, Calif.; Medical Faculty of Trinity University, Toronto, 1904; police commissioner; on the staffs of St. Francis Hospital and the Cottage Hospital, where he died May 20, aged 66.

Harrison Lee McCrary, Royston, Ga.; University of Louisville (Ky.) Medical Department, 1890; member of the American Medical Association; consultant in medicine at Brown's Hospital; died April 22, aged 81, of prostatic hypertrophy and uremia.

James William McCurdy ⊕ Thomaston, Ga.; University of Georgia School of Medicine, Augusta, in 1935; interned at the Grady Hospital in Atlanta; served in the Pacific theater during World War II; died in the Macon Hospital, Macon, April 28, aged 36, of injuries received in an automobile accident.

James Samuel McFadin, Altus, Okla.; College of Physicians and Surgeons, Dallas, 1906; died March 31, aged 68.

William Jerome McHugh, Scranton, Pa.; St. Louis University School of Medicine, 1922; member of the American Medical Association; on the staff of the Ransom Mental Hospital in Ransom; died April 9, aged 52.

John Paxton McInnes, Toledo, Ohio; Northwestern Ohio Medical College, Toledo, 1890; died April 5, aged 84.

Hugh Gordon McKay ⊕ Old Town, Maine; Tufts College Medical School, Boston, 1917; died April 28, aged 56.

William Monroe McKay, Salt Lake City; Rush Medical College, Chicago, 1925; member of the American Medical Association; secretary and state health commissioner and formerly director of the division of communicable disease, Utah State Board of Health; affiliated with the Thomas D. Dee Memorial Hospital in Ogden; died April 13, aged 59, of acute nephritis.

Herman Herve Mai, Chicago; College of Physicians and Surgeons of Chicago, 1890; member of the American Medical Association; died April 9, aged 81.

Robert George Mayer, Kaukauna, Wis.; University of Wisconsin Medical School, Madison, 1941; member of the American Medical Association; interned at the City Hospital in Cleveland; served in the medical corps, Army of the United States, in the Pacific theater during World War II and among other citations received the Bronze Star and the meritorious service award; affiliated with the Veterans Administration Hospital in Wood, where he died April 1, aged 32.

John Francis Messemer ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1915; on the staff of the Fordham Hospital; died April 16, aged 57, of pneumonia.

Leander Burgess Milbourne, Baltimore; University of Maryland School of Medicine, Baltimore, 1898; lieutenant commander in the U. S. Naval Reserve, serving in the Pacific theater during World War II; served during World War I; surgeon aboard the S. S. *Santa Isabel*, on which he died while at sea near Panama April 16, aged 67.

William Carlton Miller, College Springs, Iowa; Chicago Homeopathic Medical College, 1891; died April 25, aged 84, of carcinoma of the stomach.

Edwin Morrill Minnick ⊕ Danvers, Ill.; Rush Medical College, Chicago, 1895; an Affiliate Fellow of the American Medical Association; died in St. Joseph Hospital, Bloomington, May 2, aged 77, of cerebral hemorrhage.

William Moitrier, Brooklyn; Long Island College Hospital, Brooklyn, 1881; member of the American Medical Association; formerly on the staff of St. Catherine's Hospital; died in Brentwood, N. Y., April 20, aged 90, of cerebral hemorrhage.

Alice Tucker Moore, Denver; Gross Medical College, Denver, 1897; died April 24, aged 84.

Baxter Edward Morrow, Kansas City, Mo.; Beaumont Hospital Medical College, St. Louis, 1892; died April 27, aged 76.

Albert Thomas Murphy, Elizabeth, N. J.; Jefferson Medical College of Philadelphia, 1915; member of the American Medical Association; served during World War I; on the staffs of the St. Elizabeth Hospital and the Alexian Brothers Hospital, where he died May 16, aged 56, of coronary thrombosis.

Charles F. Murphy, Cynthiana, Ind.; Louisville (Ky.) Medical College, 1894; died in the Welborn Baptist Memorial Hospital in Evansville April 23, aged 74, of cerebral hemorrhage.

Frank A. Murphy ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1903; affiliated with the Misericordia and St. Mary's hospitals in Philadelphia and the Fitzgerald-Mercy Hospital in Darby, Pa.; died in Margate City, N. J., April 25, aged 65, of cerebral hemorrhage and hypertension.

Harry Spencer Noble, Lima, Ohio; Kentucky School of Medicine, Louisville, 1893; member of the American Medical Association; fellow of the American College of Surgeons; president of the Home Banking Company of St. Mary's and chairman of the board of directors; served overseas during World War I; member of the staffs of the Memorial and St. Rita's hospitals; died in St. Mary's May 6, aged 75, of coronary embolism.

William James Norton, Columbus, Ind.; Tennessee Medical College, Knoxville, 1894; member of the American Medical Association; formerly member of the city board of health; served during World War I; died in the Bartholomew County Hospital April 25, aged 82, of myocardial degeneration.

William Frederick Neumann, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; member of the American Medical Association; died May 18, aged 75.

Henry Sidney Oaks, Rutledge, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1912; died April 7, aged 63, of cerebral hemorrhage and hypertension.

Albert Grove Odell ⊕ Clifton Springs, N. Y.; Syracuse University College of Medicine, 1904; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the American Association for Mental Deficiency; for many years on the staff of the Clifton Springs Sanatorium and Clinic, where he died May 19, aged 68, of fibrosis of the lungs and cardiac failure.

Francis James O'Hara, North Adams, Mass.; Georgetown University School of Medicine, Washington, D. C., 1904; member of the American Medical Association; served as mayor of North Adams, member of the school committee, board of health and planning board; on the staff of the North Adams Hospital; died May 2, aged 68, of heart disease.

Alfred Gustav Pfeiffer, Paramus, N. J.; University of the City of New York Medical Department, New York, 1885; member of the American Medical Association and the Medical Society of the State of New York; served as president of the Police Pension Fund of Paramus; died April 28, aged 90, of hypertension and arteriosclerosis.

Paul West Winder ⊕ Shreveport, La.; University of Michigan Medical School, Ann Arbor, 1931; specialist certified by the American Board of Obstetrics and Gynecology; served during World War II; chief of the obstetric and gynecologic section, Highland Sanitarium; on the staff of the Charity Hospital; died May 5, aged 42.

fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; member of the American Association for the Study of Goiter; president of the park board; member of the advisory board and executive staff at St. Joseph Hospital; surgeon for the Childrens Dispensary and Hospital Association; chief of the surgical staff, member of the board of directors, advisory board and executive staff, Memorial Hospital, where he died May 11, aged 61, of coronary occlusion.

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John Monroe Gray, Joplin, Mo.; St. Louis College of Physicians and Surgeons, 1899; member of the American Medical Association; Spanish-American War veteran; on the staffs of St. John's and Freeman hospitals; died May 2, aged 73, of chronic myocarditis.

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John E. Hetherington ⊕ Grand Forks, N. D.; Jefferson Medical College of Philadelphia, 1909; served as a member of the state medical board; on the staff of the Deaconess Hospital; died May 9, aged 62, of arteriosclerosis and cardiac failure.

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Coit Inge Hughes, Phoenix, Ariz.; University of Louisville (Ky.) Medical Department, 1909; also a graduate in pharmacy; formerly secretary and superintendent of public health of Arizona; served during World War I, as county health officer and as a member of the state board of medical examiners; died May 4, aged 65.

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OSLO

(From Our Regular Correspondent)

July 6, 1947.

The Norwegian Pharmacopeia

The latest edition of the Norwegian pharmacopeia was published in 1913! To be sure, a new edition was in preparation in 1939, but it got no further during the war, and now its publication in its 1939 form is being discussed with some misgiving. In this form it was not much more up to date than the Danish pharmacopeia of 1933. Meanwhile Denmark possesses an official pharmacopeia which has recently been brought up to date. Why not, it is argued, ignore the 1939 draft of the Norwegian pharmacopeia and boldly adopt the Danish pharmacopeia as Norway's own, pending the issue of a really up to date Norwegian pharmacopeia? Would this mean loss of prestige for Norway? Quite possibly. But would that matter much in comparison with the advantages to be gained? Already the Scandinavian countries have pooled their medical activities in some textbooks and in the conglomerate weekly journal *Nordisk medicin*.

A National Campaign Against Cancer

Norway ought long ago to have had an influential body representative of modern medical science to lead the campaign against cancer. We have, to be sure, an organization known as the Norwegian Association for Combating Cancer. Its most influential and active member is a layman, lawyer Eckbo, who to his own satisfaction has traced cancer to a faulty diet. In his advocacy of this theory in his recent book on cancer he has quoted the writings of the Norwegian pathologist Professor Kreyberg. The professor's protest that he had been misquoted has led to legal proceedings ending in a fine for Eckbo and the suppression of his book. In the light of this incident the time seems ripe for the creation of a representative national organization against cancer unhampered by a reputation for eccentricity. But how much easier it is to start with a clean slate than one blurred by erasures!

A Study of Gastroduodenal Ulcer

During the war years 1941-1944 a Norwegian surgeon working in the far north of Norway devoted much of his time to an intensive study of the conditions under which gastric and duodenal ulcer developed in a population mainly concerned with fishing. With the aid of the Dr. Malthe Foundation, this surgeon, Dr. Kaare Schanke, has succeeded in publishing his study as a supplement to *Acta chirurgica Scandinavica*. One of the most remarkable of his observations was that in a group of islands to the north of the polar circle, gastric ulcer was far more common than duodenal ulcer, a reversal of the relationship of the two to each other in most other regions. Gastric ulcer was more frequent in the rural than in the urban districts, whereas the opposite was the case with duodenal ulcer. Dr. Schanke found that irregularities in the mode of living of fishermen were the most important causes of gastric ulcer, and he is inclined to suspect that one group of causes is responsible for most cases of gastric ulcer, and another group for most cases of duodenal ulcer.

Paul Owren and His Parahemophilia

We are all proud of Paul Owren on account of his recent contribution to hematology. He was born in 1905 and, after graduating at Oslo University in 1931, settled down to private medical practice, the drudgery of which he enlivened by fox farming. His artificial insemination of foxes was pioneer work which helped to render this hobby quite lucrative. Throwing off the shackles of a general practitioner in 1938, and financed by his foxes, he returned to the wards of the Rikshospital in Oslo, where he encountered a remarkable instance of hemorrhagic diathesis which had lasted since childhood in a woman aged 29. In a tiny laboratory equipped with a more or less home-made outfit, he came to the conclusion that the greatly reduced coagulability of this patient's blood was due to the absence of a hitherto unknown clotting factor which is necessary for normal clotting and which he has called factor V. He has found the differential diagnosis between hemophilia and what he calls parahemophilia easy, as the faulty coagulation of the latter is not returned to normal by the addition of thrombokinase, as in the case of hemophilia. In his opinion parahemophilia is probably not hereditary.

BRAZIL

(From Our Regular Correspondent)

Rio de Janiero, July 1, 1947.

Experimental Study of Brazilian Blastomycosis

Progress in knowledge of the infection produced by Paracoccidioides brasiliensis has been gained by an experimental study by Drs. Francisco Fialho and A. Padilha Gonçalves recently published. Following the way opened by J. Montenegro, whose studies have been previously reported, Fialho and Gonçalves observed the evolution of experimental lesions produced by intratesticular inoculations of guinea pigs. The authors disclosed an early reaction of the reticuloendothelial system, observed simultaneously with a leukocytic infiltration within twenty-four hours of the inoculation. This first reaction progresses to an exudative phase with formation of abscesses, and later to another, productive, with granulomatous organization. At a given time there is a balance between the exudative and the productive processes; after this the exudative changes become predominant, and gradually larger abscesses are formed. However, the productive process, which appears as early as the exudative one, is observed until the end. Although a longer period of observation would be desirable, the evolutionary progression of the lesions observed by Fialho and Padilha was logical and satisfactory. The presence of the fungus in its yeastlike form on the sixth day of infection led the authors to suggest the use of the inoculation of animals for diagnostic purposes, by injecting several guinea pigs, some of which should be killed in the course of the first month. By this procedure it is possible to confirm the diagnosis earlier. Once more the authors succeeded in observing the minute types of Paracoccidioides brasiliensis and the possibility of this fungus reproducing itself in the tissues by single budding, in addition to its characteristic reproduction by cryptosporulation. The authors believe that these conclusions must be submitted to further confirmation and other complementary studies which they are now performing.

Etiologic Frequency of Heart Diseases

Dr. Jairo Ramos, professor of medicine at the Paulista Medical School, has published a paper in the series of cardiologic studies he is undertaking. The paper concerns the etiologic frequency of heart diseases in general hospital patients. In a total of 1,700 adult patients, Ramos disclosed 457 cases of heart disease, thus demonstrating the high incidence (26.3 per cent) of these diseases in hospital patients. According to the etiology, the cases may be classified as rheumatism 110 (24.0 per cent), syphilis 83 (18.2 per cent), other infections 2 (0.4 per cent), nonrenal hypertension 59 (12.9 per cent), renal hypertension 49 (10.8 per cent), pulmonary hypertension 25 (5.5 per cent), sclerosis 79 (17.3 per cent), thyrotoxicosis 5 (1.1 per cent), neurocirculatory asthenia 8 (1.7 per cent), congenital malformations 2 (0.4 per cent), traumatism and tumors 3 (0.7 per cent) and other causes and unknown 32 (7.0 per cent).

The cases in which rheumatism was the etiologic factor include 89 with valvular lesions (80.9 per cent) and 21 with nonvalvular lesions (19.0 per cent). The valvular lesions were mitral stenosis and insufficiency 47 cases (52.8 per cent), pure aortic insufficiency 16 cases (17.9 per cent), aortic insufficiency and mitral stenosis 19 cases (21.2 per cent), aortic stenosis and insufficiency 3 cases (3.3 per cent), mitral stenosis and aortic stenosis and insufficiency 2 cases (2.2 per cent), mitral and aortic stenosis 1 case (1.1 per cent) and aortic stenosis 1 case (1.1 per cent). The 21 cases of nonvalvular lesions include 20 of chronic myocarditis and 1 of acute myocarditis associated with acute dry pericarditis. The 108 cases in which arterial hypertension was the etiologic factor include benign hypertension 48 cases (44.4 per cent), malignant hypertension 8 cases (7.4 per cent) and hypertension from acquired stenosis of the abdominal aorta, nodose periarteritis and paroxystic hypertonia 1 case each (0.9 per cent), acute glomerulonephritis 28 cases (25.9 per cent) and chronic glomerulonephritis 21 cases (19.4 per cent). The third important etiologic factor was syphilis, with 83 cases thus distributed: aortic insufficiency 60 cases (72.2 per cent), aneurysms 19 cases (22.8 per cent), and simple aortitis 4 cases (4.8 per cent). The 79 cases in which sclerosis was the etiologic factor included 69 cases of myocardiosclerosis (87.3 per cent), 2 cases of aneurysm (2.6 per cent) and 8 cases of aortic insufficiency (10.1 per cent).

ITALY

(From Our Regular Correspondent)

NAPLES, June 19, 1947.

Anniversary of Forlanini's Discovery

Precisely a hundred years ago, in 1847, the inventor of artificial pneumothorax, Carlo Forlanini, was born in Milan. Italy is preparing fitting honors for him on the occasion of the celebration of the anniversary of his discovery. The pneumothorax of Forlanini is still practiced throughout the world, though ideas have been somewhat modified since its original application. Forlanini considered the lung to be a wounded organ, incapable of healing, owing to the continual movement undergone during respiration. And so it was necessary to cause it to relax, retaining it at the same time in its full anatomic form by introducing aid intrapleurally. According to Forlanini, in other words, a diseased lung, for recovery, had to be rendered "static and full." This concept is now changed, as it is known that not only in the lung but in other organs too, for example the kidney, existing tuberculosis sometimes becomes even more grave under such conditions.

Anterolateral Thoracoplasty

However, the great benefits reported by the applications of Forlanini's method of intrapleural pneumothorax led investigators to continue research based on this principle. Pneumothorax treatment was unsatisfactory when diffuse adhesions existed between the two pleural layers and when the lesions of the lung involved large cavities and extensive destruction. So followed thoracoplasty in which successive ribs are cut away and the wall of the thorax collapses rigidly and firmly over the diseased lung (in a way, a surgical application producing a "static" lung of Forlanini's original concept), which becomes transformed into a relaxed organ, still retaining its form. It was found, however, that a lung treated in this way did not quite heal from tuberculous lesions: the remaining healthy tissue of the lung was damaged and often aggravated the situation. Following Sauerbruch's thoracoplasty came partial thoracoplasty in which the "demolishing" effect of the sudden collapse of the thorax over the lung was avoided: but even this was not free from criticism. It was then that Monaldi, graduate of the school of Forlanini and later noted in America and elsewhere for his method of "suction drainage," proposed what is known as anterolateral thoracoplasty. Here the aim of the surgeon is not a large reduction in lung space but to modify the tractive force of the thorax, reducing the forces exerted on the lung during normal respiration. That is, to relax the lung but to leave it still capable of performing its respiratory functions, particularly in the nonaffected parts. These adjust themselves to the conditions so as to compensate for the losses in the affected areas of the lung.

Further advances were made mainly through the work of Smith and Omodei-Zorini, present head of Italy's largest sanatorium in Rome, and another of Forlanini's school, in the development of extrapleural pneumothorax: in this, air is introduced at the back of the parietal layer. It is in many cases more effective than Forlanini's intrapleural procedure, but not so "demolishing" as the thoracoplasty of Sauerbruch and Graff.

Monaldi's Suction Drainage

Then followed the now popularly established method of Monaldi's suction drainage. In this a long, narrow catheter is introduced into the cavity of the affected lung and is connected to a suction apparatus by means of which the cavity can be drained. At first this procedure provoked criticism and was treated with reserve, though now its acceptance is world wide. There is no doubt that extraction of toxic matter from the infected parts produces beneficial results, in aiding the self-healing tendencies of the tissues and in cleaning out the lung. Maier spoke of Monaldi's method in 1944 during his talk to the medical section at the fortieth annual meeting of the National Tuberculosis Association in Chicago. He said that the Monaldi procedure "may result in apparent closure of the cavity with the conversion of the sputum, but even after subsequent thoracoplasty performed to maintain closure, the cavity may reopen to large size. As far as I know, the literature does not contain any large series of cases in which intracavitary suction drainage was followed by thoracoplasty and final results were evaluated." However, following the increasingly large number of favorable results of the Monaldi system (also in America), any doubts which Maier had must have subsequently been dispelled. In the *Journal of Thoracic Surgery* (**15**:153 [June] 1946) J. R. Head refers to 29 cases treated with Monaldi's suction method at the Edward Sanatorium, with analysis of the results obtained. The treatment may be applied alone, but often it is aided by thoracic surgery. Sometimes an operation on the phrenic nerve is performed for immobilization of the diaphragm. Immobilization of the hemilateral diaphragm relaxes the lung, and extraction from the cavity can then be carried out more fully and completely. At other times Monaldi's suction is associated with thoracoplasty.

Recently an important congress of tuberculosis surgeons in Italy, presided over by Monaldi himself, was held. The leading specialists in the country were present. Many reports were read, and supported with statistical evidence, and the results of various forms of treatment were given. Monaldi described fully the various methods: thoracoplasty, extrapleural pneumothorax and Monaldi's suction, applied either alone or in conjunction with other procedure.

Suction Drainage with Streptomycin

Head, in the article quoted, states that "Monaldi's method has come to occupy an important place in the treatment of pulmonary tuberculosis." There is every reason to believe that it will become even more important, especially in the light of modern antibiotic treatment. Modern treatment seeks for more direct, immediate introduction of the drug (as for example penicillin or streptomycin in disorders of the central nervous system, direct into the vertebral column) and to introduce streptomycin directly to the affected part of the lung. The method of Monaldi suggests the best means of doing this. The catheter can equally serve as a means of introducing the drug or cleaning out the cavity. Monaldi is probably already applying this method, at the moment, in the large sanatorium, which he personally directs. But reports of results have not yet been officially published

Correspondence

POLIOMYELITIS AND PREGNANCY

To the Editor:—There is a growing feeling among physicians in certain quarters that susceptibility to poliomyelitis is increased during pregnancy. The experience in Florida during the 1946 outbreak, in which 572 cases were reported, possibly may be of interest.

Eight cases occurred among pregnant women, all of whom were in the second and third trimester. In this group there were two deaths, one of which was the only case in a pregnant Negro woman. Of the 6 remaining patients, 1 was in a respirator for a long time. Five women resided in Key West, which had a total of 45 cases with an attack rate of 2 per thousand. Four of the women in Key West were wives of navy personnel. Investigation in that city revealed no specific factors to explain the large number of pregnant women affected.

On the other hand, there were 78 cases of poliomyelitis among women of both colors in the age group 15 to 44, which might be considered the child bearing age. This would give a rate of 14 cases per hundred thousand for this group. During 1946 there were slightly over 55,000 births, from which a rate of 14 per hundred thousand for pregnant women can be computed. It would seem that, based on this small number of cases, there is no difference in the susceptibility between pregnant and nonpregnant females in the child bearing age.

Edwin G. Riley, M.D., Jacksonville, Fla.
Epidemiologist, Florida State Board of Health.

LEPROSY

To the Editor:—The following are my observations on the comments of Dr. G. W. McCoy of New Orleans (The Journal, Dec. 14, 1946, p. 947):

1. That early lesions of leprosy may be confused with the sarcoids, lupus erythematosus and syphilis, see pages 269-272 of McCarthy's Histology of Skin Diseases (St. Louis, C. V. Mosby Company, 1931), and note the following: Figure 115 from Kyrle's histopathology; "Boeck and Mazzi found acid-fast bacilli in nasal secretion"; figure 116 and description of histology of angiolupoid. They are indistinguishable from bacterionegative or the paucibacillated form of tuberculoid leprosy in reaction. I agree with the use of laboratory tests including histology, but, besides their limitations, how many dermatologists make use of them, how many patients are examined neurologically (Wise, Fred, in discussion, The Journal, Oct. 23, 1943, p. 470), and how many are followed up for years to await the possible appearance of Mycobacterium leprae? (Velasco: *Internat. J. Leprosy* 9:91, 1941). Kyrle's instructive case of lupoid cited by McCarthy (p. 271) is no different in behavior bacteriologically and histologically from reacting tuberculoid leprosy. Rabello (The Journal, Aug. 15, 1935, p. 1205) contends that all symptoms of Besnier-Boeck's disease may be caused by leprosy, as proved bacteriologically, histologically and by animal inoculation. These diseases produce chronic inflammatory granuloma, and I do not know of any differential characteristics (see again Wise, p. 471).

2. Pathogenically, early leprosy lesions on contact children appear and progress for years without demonstrable bacilli by numerous and periodic examinations. Therefore the pathologic changes produced must be due to a "virus." Carreon (Transaction Open Meeting, Leprosy Advisory Board, p. 69, Bureau of Printing, Manila, 1932) examined twelve families of 12 segregated children and found either father or mother M. leprae negative clinical or suspected lepers; in no case were both parents with lesions; besides the parents, 9 other children were found clinical or suspected lepers. Velasco (Revista Filipina de Medicina y Farmacia, **25**:423, 1934) examined 15 bacteria negative clinically leprous parents and 46 of their children; he found 8 bacillated and 27 clinical lepers among them; in thirteen families both parents were examined, and in twelve only one spouse had the disease; in the thirteenth family both spouses had leprosy, but they came from the same endemic town and both have relatives as inmates in Culion Leper Colony. Adult immunity and infectiousness of the microscopically negative are evident.

3. As to "persons unquestionably infected during adult life," how exclude individuals as the Molokai cases under observation for a number of years by McCoy (Pub. Health Bull. 66, Washington, 1914) and finally confirmed but "which clinically gave only trifling evidences of skin lesions and none whatever that would under ordinary circumstances have been regarded as suspicious of leprosy," becoming manifest lepers after a history of contact in adult life? Nothing less than experiment is required to prove adult susceptibility. But since lesions may spontaneously but temporarily disappear according to observations on contact children, even one or several negative skin and neurologic examinations before the experiment cannot exclude existence of a latent infection.

4. I agree that Philippine control measures would be unnecessary in the United States, but the reason is not experience but infant protection, because even through education alone, leprosy infection in Texas and Louisiana can be prevented or reduced. This happened in Balala, Culion and Minnesota, where only the male Scandinavian lepers (Gronvold: *J. Cutan. & Ven. Dis.*, 1884, No. 2, p. 17) raised families with nonleprous wives; direct contact was mostly or entirely with the mothers, only indirect with the leprous fathers.

5. Proof of infantile susceptibility and adult immunity is based on an overlooked fundamental that under natural conditions transmission (or nontransmission) of a thoroughly understood communicable disease (bacterial, parasitic or insect borne) obeys a certain universal and obligatory biologic law. This is independent of those governing individual, local or regional clinical variations, and time required for their appearance. Forty years of observation in Culion Leper Colony shows that in Balala, the nonleprous district, with a population of about 1,000 employees, laborers including their families, only 2 adults developed manifest leprosy; the first had a leprous brother, the second a leprous first cousin as inmates in the colony. Daily direct contact of lepers with employees is the rule, and so is indirect contact with their children. Yet the disease failed to spread. This occurs in all similar leprosariums and explains clearly the disappearance of the disease among the descendants of Minnesota male lepers. Barring historical evidences which are subjective and therefore unscientific in leprosy study, adult immunity is a universally established fact not only by experience, but epidemiologically and by recorded experimental inoculations of man. In the leper district adjoining Balala, Lara (*Monthly Bull., Bureau of Health* **22,** 1946) found that at least 50 per cent of contact children of lepers showed at one time or another before the age of 5 years unequivocal leprosy lesions, some of which disappeared entirely. Since the biologic law governing nontransmission of leprosy (adult immunity) in Balala, Culion, is universal and obligatory, therefore the law governing transmission (infantile susceptibility) observed in the leper district of Culion must indubitably be identical with that controlling transmission elsewhere.

[A correction: In the fourth paragraph, fifth line, of my communication in The Journal, Oct. 19, 1946, page 407, "allowing the child" should read "allowing the patient to pursue a normal productive life."]

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Right of Court to Order Physical Examination of Plaintiff in Personal Injury Case.—The plaintiff sued the defendant druggists for injuries alleged to have resulted from the faulty filling of a prescription From a judgment dismissing the cause, the plaintiff appealed to the Supreme Court of Idaho.

The trial of this case was set for a Monday morning On the preceding Monday the plaintiff's counsel was requested to have the plaintiff submit to a physical examination by the defendant's physicians The plaintiff's counsel was then acquiescent but he advised the defendant on the following Thursday that the plaintiff would not submit to an examination by one of the physicians selected Other physicians were then suggested, but plaintiff's attorney advised defendant that plaintiff would not submit to a physical examination by any doctor other than her attending physician On Saturday the defendant secured a court order requiring the plaintiff to submit to a physical examination at 12:30 on that day at the office of one of the selected physicians Telephone conversations ensued between plaintiff and one of the physicians, the court and plaintiff's attorney, and plaintiff then indicated a willingness to submit to the examination but later stated she could not be present and secure attendance of her physician at that time 12:30 went by and, after further negotiations, the meeting was deferred to 1:30. Plaintiff then stated that the time was too short, that she was engaged in taking care of a child and an older person and could not be present. As a result, no physical examination was made on Saturday. On the Monday morning set for a hearing the defendant moved, on affidavits pro and con, to dismiss the case because of the plaintiff's failure to comply with the court order. At this hearing the plaintiff testified that she had told her attorney "before 12:00 Saturday, that you (she) would submit to that (physical) examination at 4:00 o'clock that afternoon." At the conclusion of the hearing, in plaintiff's presence in open court, plaintiff's attorney stated "At this time we renew our offer to submit to an examination." Whereupon defendant's counsel renewed his objection to the offer and the trial court dismissed the cause. The record indicates that the plaintiff had no objection to the two physicians last suggested by the defendant to conduct the examination if her physician could also be present, which was agreeable to all On appeal the plaintiff argued that the trial court abused its discretion in dismissing the suit and that the trial court had no authority to enter an order requiring plaintiff to submit to a physical examination.

The Supreme Court reviewed all the cases in both state and federal jurisdictions which have considered the question and concluded that a majority of the decisions recognize the discretionary power of a court to order an examination by physicians suggested by the defense and approved by the court, and to enforce noncompliance of such an order by dismissal In this case, however, said the Supreme Court, the time fixed by the trial court for the examination was too short and the dismissal was unjustified because, while plaintiff perhaps unnecessarily delayed the examination on Saturday, she had a right to arrange to have her physician present at a time reasonably convenient to her. In ordering the examination a court should give due regard to plaintiff's health, and the time and place, though imperative and requiring prompt and immediate compliance therewith, should be reasonable as to all parties, permitting plaintiff to have present such attendants, reasonably limited as to number, as she may desire.

Accordingly the Supreme Court reversed the judgment of dismissal and remanded the cause to the trial court for further proceedings.—*Greenhow v. Whitehead's, Inc., 175 P. (2d) 1007 (Idaho, 1946).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, Aug. 2, page 1198.

BOARDS OF MEDICAL EXAMINERS

ARKANSAS * *Examination.* Texarkana, Nov. 6-7, 1947. Sec, L. J. Kosminsky, Texarkana.

ALABAMA: *Examination.* Montgomery, June 22-24, 1948. Sec., Dr D. G. Gill, 519 Dexter Ave, Montgomery 4

ARKANSAS: *Eclectic.** Little Rock, Nov. 6 Sec., Dr. Clarence H. Young, 1415 Main St, Little Rock

CALIFORNIA: *Written.* Los Angeles, Aug. 25 28. *Oral.* San Francisco, Nov. 8-9. Sec, Dr. Frederick N. Scatena, 1020 N. St, Sacramento 14.

DISTRICT OF COLUMBIA: * *Endorsement.* Washington, Sept. 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 Municipal Bldg., Washington.

FLORIDA * *Examination* Jacksonville, Nov. 25 26. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami.

GEORGIA. Atlanta, Oct. 14 16. Sec, Mr. R. C Coleman, 111 State Capitol, Atlanta 3

ILLINOIS Chicago, Oct. 14-16 Supt. of Registration, Dept. of Registration and Education, Mr. Philip M. Harman, Springfield

INDIANA *Examination.* Indianapolis, June 1948. Sec, Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg, Indianapolis.

KANSAS: Topeka, Dec. 3 4. Sec, Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 North 7th St., Kansas City.

KENTUCKY: *Examination* Louisville, Sept *22-24.* Sec, State Board of Health, Dr. P. E. Blackerby, 620 S Third St, Louisville 2

MARYLAND: *Medical Examination.* Baltimore, Dec 9 12. Sec., Dr Lewis P. Gundry, 1215 Cathedral St, Baltimore. *Homeopathic Examination.* Baltimore, Dec. 9-10. Sec., Dr. J. A Evans, 612 W. 40th St, Baltimore.

MINNESOTA: * St. Paul, Sept. 3-5. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul

MISSISSIPPI: *Endorsement.* Jackson, Dec. 1947. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson

MONTANA: Helena, Oct. 6 8. Sec, Dr. O. G. Klein, First National Bank Bldg, Helena

NEVADA: Carson City, Nov. 3. Sec., Dr. G. H. Ross, 215 N. Carson St, Carson City.

NEW HAMPSHIRE: Concord, Sept. 11-12 Sec, Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord

NEW JERSEY. *Examination.* Trenton, Oct. *21-22.* Sec., *Dr.* E. S. Hallinger, 28 W. State St., Trenton

NEW MEXICO: * Santa Fe, Oct 13-14 Sec., Dr. LeGrand Ward, 141 E Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, Oct 6 9, 1947. Sec, Dr. Jacob L. Lochner, Jr, Education Bldg., Albany.

OHIO: *Endorsement.* Columbus, Aug 12, 1947. Sec., Dr. H. M Platter, 21 W. Broad St., Columbus.

RHODE ISLAND: * *Examination.* Providence, Oct 2-3 Chief, Division of Professional Regulation, 366 State Office Bldg, Providence.

SOUTH CAROLINA: Columbia, Nov. 10 12. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia

UTAH: *Examination.* Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B Loomis, 324 State Capitol Bldg, Salt Lake City.

WEST VIRGINIA: *Examination.* Charleston, Oct 2-4. Commissioner, Public Health Council, Dr. N. H. Dyer, State Capitol, Charleston.

WYOMING: *Examination.* Cheyenne, Oct. 6. Sec, Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, First week in August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: Sept 16. Sec, Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson

COLORADO: [illegible] Sept. 17-18. Sec., Dr. Esther B. Starks, 1459 [illegible]

DISTRICT O[illegible] Washington, Oct. 20-21. Sec, Commission on Licensure, Dr. G. C. Ruhland, 6012 E Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 1. Final date for filing application is Oct. 16 Sec, Dr. W. M Emmell, University of Florida, Gainesville.

[illegible] Ann Arbor and Detroit, Oct. 10-11. Sec, M[illegible] Walnut St, *Lansing.*

[illegible] Minneapolis, Oct *7-8.* Sec, Dr. Raymond N. B[illegible] y of Minnesota, Minneapolis.

[illegible] Omaha, Oct. 7 8. Dir., Bureau of Examin[illegible] umble, State Department of Health, Room 10[illegible] oln 9.

[illegible] Santa Fe, Aug. 3 Sec., Miss Marion M. R[illegible] anta Fe

[illegible] ec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg, Oklahoma City.

OREGON. *Examination.* Portland, Sept 6. Final date for filing application is Aug *20* Sec., *Board of Higher Education, Basic Science* Examining Committee, Mr C D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: *Examination.* Aug 13 Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg, Providence.

[illegible] Memphis, Sept. 18-19. Sec., Dr. O W. [illegible] mphis

[illegible] Madison, Sept. 27. Final date for filing [illegible], Mr. William H. Barber, Watson and Scott Sts, Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

33:557-746 (May) 1947

Direct Intracardiac Angiocardiography. Diagnostic Value. I. Chavez, N. Dorbecker and A Celis—p. 560
Substitution of a Tetrahedron for the Einthoven Triangle. F. N. Wilson and F. D. Johnston—p. 594.
*Endocardiac Electrocardiogram Obtained by Heart Catheterization in Man A. Battro and H. Bidoggia—p 604
*Myocardial Depression in Shock: Survey of Cardiodynamic Studies C. J. Wiggers—p 633.
Kent's Fibers and the A-V Paraspecific Conduction Through the Upper Connections of the Bundle of His Tawara I. Mahaim—p 651.
Effect of Smoking on the Vasodilatation Produced by Oral Administration of 95 per Cent Ethyl Alcohol or a Substantial Meal. Grace M Roth and C. Sheard—p 654.
Report from Cardiac Clinic of Boston Lying In Hospital for First Twenty Five Years. B E Hamilton—p 663
Physiologic Condition of Heart in Natives of High Altitudes. A. Rotta —p. 669.
Studies on Flutter and Fibrillation: The Influence of Artificial Obstacles on Experimental Auricular Flutter. A Rosenblueth and J. Garcia Ramos—p. 677.
Synchronization of Auricular and Ventricular Beats During Complete Heart Block M. Segers, J. Lequime and H Denolin—p. 685
Comparative Study of Blood Cultures Made from Artery, Vein and Bone Marrow in Patients with Subacute Bacterial Endocarditis. M. Salazar Mallén, E. Lozano Hube and M. Brenes—p 692.

Endocardiac Electrocardiogram.—Battro and Bidoggia of Buenos Aires studied the electrocardiographic variations in 23 persons as registered by endocardiac catheterization. The tracings show mainly the variations of potential of the heart, detected at the endocardiac surface The auricular endocardiac electrogram (endocardiac P wave) consists normally of a series of rapid deflections (S, e, i, o waves) joined to a final slow deflection (Ta wave) by means of the o-u segment. The shape of the auricular electroendogram undergoes modifications according to the position of the electrode inside the auricle. Rapid deflections represent the process of depolarization of the auricles Repolarization is represented by the final slow portion, as in the ventricular complex. The initial negative deflection (S wave) of the auricular complex is regarded as an exponent of the activity of the sinoauricular node. The endocardiac ventricular electrogram undergoes modifications in shape, depending on whether the electrode is placed in the right ventricle or right auricle. The authors describe the electroendogram obtained from the ventricle (type I) and from inside the auricle (type II). They also describe the variations of endocardiac potential in bundle branch block, in 1 case of auricular extrasystoles, in 1 case of auricular asynchronism and in cases of premature contractions of the right and left ventricles The electrocardiographic curves registered with the catheter placed in the superior and inferior venae cavae and at different sites in the venous system are described In the cases of bundle branch block the endocardiac electrogram shows the same characteristics that have been observed in experimental bundle branch block in the dog

Myocardial Depression in Shock.—Wiggers and his associates studied the hemodynamics of hemorrhage and shock with the hope of elucidating especially the cardiovascular mechanisms involved in irreversibility. The cardiodynamic changes which occur after simple hemorrhage, during prolonged hypotension, during reinfusion of all the withdrawn blood and during spontaneous circulatory failure following infusion were studied in the same animal. Following simple hemorrhage sufficient to reduce mean arterial pressure to 50 mm. of mercury, the changes in ventricular actions are all secondary to reduction in venous return and decrease in effective central venous pressure. Electrocardiograms do not reveal significant changes. Changes in the contour of the central arterial pulse consist in abridgment of the period of systolic ejection and development of a primary spike followed by a peaked summit, and this is followed by a deep incisura. As a result of decreased venous pressure, ventricular filling is slower, initial tensions decrease in both ventricles, and their diastolic size is smaller. Pressure and volume curves indicate that the ventricles expel their diminished volumes with good velocity. If severe posthemorrhagic hypotension is prolonged for 135 minutes, death results from an oligemic type of failure unless blood is reinfused. Such reinfusion is of only temporary benefit; circulatory failure and eventually death follow. Irreversibility develops during the period of prolonged hypotension. This includes depression of the myocardium. Reinfusion of blood restores arterial pressures and pulses as well as cardiac output to normal, but in order to do so the ventricles are required to operate under supernormal conditions of high venous pressure and initial tensions. As soon as these reestablish at normal levels, cardiac output decreases and the ventricles pump less efficiently, owing to a depressed state of the myocardium. As arterial pressure declines, reduction in venous return becomes so great that the myocardial depression is obscured, though it is detectable by special tests. A progressive circulatory failure develops despite the fact that blood volumes are not significantly decreased. This represents a form of normovolemic shock due solely to default of the peripheral circulation and of the myocardium. Since the functional state of the myocardium and the capacity of the coronary responses at the time of shock-producing catastrophes may often be below par, myocardial depression may play as significant a subsidiary role in some cases of human shock as it did in animals submitted to a particular type of hemorrhage and shock.

American Journal of Medical Sciences, Philadelphia

213:513-640 (May) 1947

*Studies in Oral Administration of Penicillin: I. Assays of Various Preparations and Determination of Effective Therapeutic Dose. W. S. Hoffman and I. F. Volini—p. 513.
*Id : II. Results of Treatment of Pneumococcic Lobar Pneumonia and Other Acute Infections with Several Oral Penicillin Preparations W. S. Hoffman and I. F. Volini.—p. 520.
*Serologic Response Following Penicillin Therapy for Early Syphilis E G. Clark, R W. Maxwell and V. Scott—p 535
Absorption and Elimination of Sulfadiazine Administered as Tablets, as Ground (Micronized) Powder and as Microcrystals E M Boyd and R W. Dingwall—p. 549.
Effect of Sodium and Potassium Lactates on Absorption and Elimination of Microcrystalline Sulfadiazine. E. M Boyd and R W. Dingwall —p 557.
Hypothermia and Elevated Serum Magnesium in Patient with Facial Hemangioma Extending into Hypothalamus. F. W. Sunderman and W. Haymaker.—p. 562.
Clinical Studies of Pharmacologic Effects of Tetraethyl · Ammonium Chloride in Hypertensive Persons Made in Attempt to Select Patients Suitable for Lumbodorsal Sympathectomy and Ganglionectomy. R. Birchall, R. D. Taylor, B. E Lowenstein and I H Page—p 572.
Role of Trauma as Possible Etiologic Factor in Regional Enteritis. Effect of Nonpenetrating Trauma on Small Intestine of Dogs M. A Spellberg and A. Ochsner—p. 579.
Generalized Capillary and Arteriolar Platelet Thrombosis J. R. Carter. —p 585.
Hypoprothrombinemic Action of Quinine Sulfate. L A Pirk and R Engelberg—p. 593.
Electrocardiographic Observations in Chronic Cholecystitis Before and After Surgery. E Ruth Breitwieser—p 598
*Monoplegia Following Carotid Sinus Pressure in the Aged F. D Zeman and S. Siegal—p 603.
Treatment of Carriers of Endameba Histolytica and Other Protozoa with Carbarsone, Chiniofon and Vioform J. H Arnett—p 608
Present Status of Tryparsamide in Syphilotherapy. H. Koteen—p 611.
Medical Use of Radioactive Isotopes: I. Radioactive Isotopes in Hematologic Disturbances and Neoplasms. B E. Hall and C H Watkins —p 621.
Id II. Radioiodine and Thyroid F R. Keating Jr—p 628.

Effective Dose of Oral Penicillin Preparations.—Hoffman and Volini assayed the plasma penicillin levels achievable with varying doses of penicillin administered orally and with a large variety of preparations, with and without diluents, antiacid substances or buffers. Doses of 25,000 units were usually ineffective in producing appreciable plasma penicillin levels. When 50,000 units was administered every two hours, plasma levels of 0 06 unit per cubic centimeter were frequently achieved.

but there were too many zero levels and too few levels higher than 0.06 unit per cubic centimeter to make the dosage a reliable substitute for parenteral therapy. Doses of 100,000 units, when preceded by a primary dose of 200,000 units one hour earlier, gave levels averaging higher than 0.125 unit per cubic centimeter for the first two hours and about 0.06 unit for the next two hours. Such levels were comparable to those obtained with intramuscular injections of 20,000 units every three hours. At this dosage there were no great differences in the results with the various preparations. Doses of 200,000 units gave perceptible plasma levels even at six and eight hours after the dose. From these observations, the therapeutic regimen established was a primary dose of 200,000 units followed by 100,000 units every three hours.

Oral Penicillin in Pneumococcic Lobar Pneumonia and Other Acute Infections.—Hoffman and Volini treated 49 patients who had pneumococcic lobar pneumonia and 81 patients who had miscellaneous infections produced by penicillin-sensitive organisms by administering orally several preparations of penicillin in primary doses of 200,000 units followed by 100,000 units every three hours. In 37 patients with pneumonia, fever and toxic symptoms subsided within forty-eight hours and in some patients within twelve hours. Of the remaining 12 patients failure was due to (*a*) inadequate absorption of penicillin, (*b*) the presence of penicillin-insensitive organisms such as a virus, (*c*) penicillin-resistant pneumococci or (*d*) overwhelming complications. The patients with miscellaneous infections responded similarly well to oral management with penicillin, those with hemolytic streptococci rapidly and those with staphylococci more slowly. The results were comparable to the authors' experience with parenterally administered penicillin. The plasma penicillin levels under this regimen were usually 0.06 unit per cubic centimeter or higher during most of the three hour interval between doses. Urticaria occurred in 5 (3.8 per cent) of the 130 treated patients. When purified preparations were used, only 2 spurious cases of urticaria developed. The severity of the infection has been found to have no relation to the penicillin dosage required. Only the sensitivity of the organism to penicillin should be the determining factor in dosage.

Penicillin in Early Syphilis.—Clark and his co-workers studied the serologic response following penicillin therapy in 208 patients with previously untreated primary or secondary syphilis. The serologic response observed during the first eight weeks following penicillin therapy for early syphilis is comparable to that previously reported during weekly treatment with the several arsenical drugs. Since some of the latter agents are known to be therapeutically inferior, this observation reemphasizes the fact that, *in the final evaluation of antisyphilitic drugs*, serologic response is not an all important criterion of therapeutic efficacy. In a comparison of the serologic response during the first eight weeks following penicillin with that previously recorded during weekly arsenical treatment by stage of disease (seropositive primary, early secondary and late secondary syphilis), an apparent retardation in the rate of fall of serum reagin following penicillin was observed. The serologic trends recorded during the first year following penicillin therapy provide evidence of a linear relationship between duration of infection and rate of fall of serum reagin—the longer the duration of disease the slower the serologic response. Studies of the effects of age, race and sex on the serologic response showed a delayed rate of fall of serum reagin in Negro females and in the youngest age group under 20 years. Evidence is presented that the retarded response observed is related (in these groups) to a higher percentage of patients who had (*a*) longer duration of disease, (*b*) the least efficacious treatment scheme or (*c*) a high incidence of subsequent relapse, or to a combination of these factors.

Monoplegia in the Aged.—Zeman and Siegel report 1 case of irreversible cerebral damage following carotid sinus pressure. A man aged 83 with long-standing hypertension developed a permanent right monoplegia within a few minutes after routine testing of carotid sinus responsiveness. The test should be reserved for cases in which it will serve a diagnostic or therapeutic purpose of definite importance. It should not be used as a routine test in patients past 50 and it should not be employed in the elderly to stop attacks of supraventricular tachycardia except in the unusual and obstinate cases when other measures have failed.

American Journal of Public Health, New York

37:353-498 (April) 1947

*Dust and Its Control as Means of Disinfection of Air. C. G. Loosli.—p. 353.

Problems and Errors in Assigning Causes of Bacterial Food Poisoning. G. M. Dack.—p. 360.

Inactivation of Virus of Infectious Hepatitis in Drinking Water. J. R. Neefe, J. B. Baty, J. G. Reinhold and J. Stokes Jr.—p. 365.

Investigations of Swab Rinse Technic for Examining Eating and Drinking Utensils. L. Buchbinder, T. C. Buck Jr., P. M. Phelps, R. V. Stone and W. D. Tiedeman.—p. 373.

Dishwashing Practice and Effectiveness (Swab-Rinse Test) in a Large City as Revealed by a Survey of 1,000 Restaurants. H. J. Kleinfeld and L. Buchbinder.—p. 379.

Critical Study of Machine Dishwashing. W. L. Mallmann, P. DeKoning and L. Zaikowski.—p. 390.

Field Studies Relating to Immunity in Infectious Hepatitis and Homologous Serum Jaundice. R. L. Gauld.—p. 400.

California Hearing Conservation Program. J. M. Bierman and D. R. Caziarc.—p. 407.

*Review of Induction and Discharge Examinations for Tuberculosis in the Army. E. R. Long and E. L. Hamilton.—p. 412.

Demonstration of Hormesis (Increase in Fatality Rate) by Penicillin. W. A. Randall, C. W. Price and H. Welch.—p. 421.

Public Opinion Measurement as an Instrument in Public Health Practice. H. N. Calver and O. T. Wingo Jr.—p. 426.

*Report of Outbreak of Q Fever at National Institute of Health: Epidemiologic Features. R. J. Huebner.—p. 431.

Studies on Histoplasmosis in Rural Community. B. J. Olson, J. A. Bell and C. W. Emmons.—p. 441.

Dust Control and Disinfection of Air.—According to Loosli the bacterial content of dust found in homes, schools, factories, offices and hospitals varies with the different environments. Saprophytic organisms usually predominate, but parasitic and pathogenic agents may be found in large numbers. There are ample data to show that dust is an important vehicle for the spread of certain diseases of bacterial and virus etiology in the laboratory, hospital wards and army barracks. It most likely plays an equally important role in the spread of infections in schools and homes. Ultraviolet light, glycol vapors and hypochlorous acid employed in the disinfection of air have only a limited effectiveness against dried dust borne organisms. Oiling floors, bedclothes and other textiles is a highly effective procedure for the control of dust, lint and dust borne bacteria. The action of the oil is a mechanical one only. Although the most important "environmental reservoirs" of pathogens found in hospital wards are the floors and bedclothes, all surfaces, as well as all textiles (blankets, sheets, pajamas, clothes of attending nurses and doctors) should be oiled to bring about the maximum dust control. Studies indicate that oiling floors, bedclothes and other textiles can effect a significant reduction in the incidence of respiratory tract infections of streptococcus etiology in hospital wards and army barracks.

Examination for Tuberculosis in Army.—Long and Hamilton say that as of Aug. 1, 1945 approximately 15,065,000 Selective Service registrants in the 18 through 37 year age groups had been physically examined at local boards and induction stations, of whom 4,828,000 had been placed in class 4-F. Of this number 129,900 were so classified because of tuberculosis. This represents 2.7 per cent of all men in the 4-F class and 8.6 men per thousand examined. The rejection rate for tuberculosis in selectees dropped from 14.9 per thousand in 1942 to 7.8 in 1945. The rate was continuously higher for white persons than for Negroes. Some liberalization in application of standards for acceptance, and a lowering in age of selectees, were the chief apparent reasons for the decrease. The curve of hospital admission rate for tuberculosis in the army was characterized by high points at the beginning and end of the war. The peak at the beginning was due to inadequacy of induction examination, with resultant acceptance of numerous men found later to be tuberculous. The high point at the end was due to discovery of cases in the course of physical examination on discharge. Discharge for tuberculosis totaled approximately 15,000 men in the years 1942-1945 inclusive. About 60 per cent of the patients admitted to hospitals for tuberculosis were ultimately discharged as having active tuberculosis. In physical examination on separation a large number of cases of minimal tuberculosis were discovered. The rate of discovery was higher in men with oversea service than in men without, a fact suggesting that new infections were acquired in greater number overseas than at home.

Q Fever at National Institute of Health.—Huebner says that between Dec. 17 and May 30, 1945 an outbreak of Q fever involving 47 persons occurred in a single building of the National Institute of Health, Bethesda, Md. The outbreak was unique in three respects: (1) the large number of human cases involved (47), (2) the apparent variation in immunologic status of the several populations at risk and (3) a concomitant outbreak in two guinea pig colonies in the same building. Clinical as well as serologic evidence of Q fever was detected in 44 of 142 workers and in 3 of 55 visitors to this building. Rocky Mountain spotted fever tick vaccine and exposure during a previous outbreak of Q fever were factors possibly tending to reduce the incidence of Q fever during the 1946 outbreak. A chronologic study of cases in laboratory workers showed a correlation between the dates of preparation of yolk sac antigens and the probable dates of exposure in the cases. The unsuspected resistance of Rickettsia burneti to such chemical agents as solution of formaldehyde and the manipulations required in preparing antigens were considered to be possible factors in the outbreak. Guinea pig excreta were also considered a possible source of the human outbreak, since viable R. burneti have been recovered from the urine of guinea pigs months after defervescence of the disease.

American Review of Tuberculosis, New York

55:301-384 (April) 1947

International Union Against Tuberculosis. K. Emerson.—p. 301.
*Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: Results in 710 Cases from 1937 to 1946. R. S. Mitchell, J. S. Hiatt Jr., P. P. McCain, H.-F. Easom and C. D. Thomas.—p. 306.
Transverse Myelitis Accompanying Tuberculous Meningitis. R. H. Rigdon.—p. 332.
Management of Primary Tuberculosis in Children. R. V. Platou.—p. 341.
*Pulmonary Function Following Pneumothorax: Investigation of Volume and Ventilation of Lungs. G. Birath.—p. 349.
*Studies in Chemotherapy of Tuberculosis: VIII. Comparative Action of Four Sulfones in Experimental Tuberculosis in Guinea Pigs and Combined Action of Streptomycin with One of the Sulfones. M. I. Smith, W. T. McClosky and E. L. Jackson.—p. 366.
Diagnostic Culture of Tubercle Bacilli: Simplified Procedure in Public Health Work. Marjorie Van Vranken.—p. 374.
Rehabilitation Difficulties. E. Bridge.—p. 379.

Pneumoperitoneum.—Mitchell and his co-workers employed artificial pneumoperitoneum in the treatment of 710 patients with pulmonary tuberculosis. Four hundred and seventy-four of these patients were so treated for three months or longer. The report is based on this group except for the complications which cover the entire 710 cases. The use of pneumoperitoneum for an average of 54.5 weeks was responsible for 57 per cent satisfactory results in 188 white patients and, used for an average of 50.5 weeks, was responsible for 37 per cent satisfactory results in 286 Negro patients with advanced pulmonary tuberculosis not amenable to conventional forms of collapse therapy. Pneumoperitoneum was useful in relieving symptoms in terminal tuberculosis and it was occasionally useful in obliterating old pneumothorax spaces in which the lung had failed to reexpand, in obliterating empyema spaces and in controlling pulmonary hemorrhage when other methods failed. An abdominal binder is a useful adjunct to pneumoperitoneum in most patients. The complications of pneumoperitoneum given to 710 patients for periods ranging from one dose to 306 weeks were minor in 8.6 per cent and major in 4.7 per cent; pneumoperitoneum was the direct cause of death in 1 case. Pneumoperitoneum was responsible for a significant increase in the failure of diaphragms to regain normal function following phrenic crush. Tuberculous enteritis is a contraindication to the method. The possibility of using pneumoperitoneum should always be considered in planning the treatment of advanced pulmonary tuberculosis.

Pulmonary Function Following Pneumothorax.—Birath studied 25 patients with pleurisy with effusion without parenchymal lesion and in whom so-called preventive pneumothorax treatment was terminated by his method of estimation of the total lung volume and its subdivisions and of the respiratory dead space. Total and vital capacities were diminished. Equilibrium and residual capacities were not generally diminished to the same degree, and their share in the total capacity was thus increased. While the diminished total and vital capacities were due to the impairment of the thoracic and diaphragmatic mobility through pleural adhesions, the cause of the increased relative lung volume values was a hypoventilation of certain parts of the lung, provoked by the same cause. In an additional 11 cases with completed pneumothorax treatment and with more or less extensive parenchymal lesions, the majority presented low total and vital capacities, considerable increase of the relative lung volume values and in certain cases increased values for the respiratory dead space. The cause of the serious impairment of the lung function was in some cases in part parenchymal contraction with so-called compensatory emphysema and reduction of the parenchyma, but in the majority of cases the cause was pleural changes following pneumothorax treatment (ventilatory insufficiency). It is suggested that in certain cases, when a lung retraction complicates pneumothorax treatment, the treatment should be abandoned and replaced with other collapse measures.

Chemotherapy of Tuberculosis.—Smith and his co-workers studied the chemotherapeutic efficacy of (1) the sodium salt of 4-amino-4'-galacturonylaminodiphenylsulfone (galacturonide), (2) 4-amino-4'-ureidodiphenylsulfone (carbamyl), (3) 4-amino-4'-n-propylaminodiphenylsulfone (n-propyl) in experimental tuberculosis of guinea pigs in comparison with sodium p,p'-diaminodiphenylsulfone-N,N'-didextrosesulfonate (promin). The chemotherapeutic effectiveness of these compounds, expressed as the ratio between the extent of tuberculous involvement in the controls and treated animals, was 2.7 for compound 1, 2.6 for compound 2 and 2.8 for compound 3 as compared with 2.6 for promin. The n-propyl derivative is less than one fifth as toxic as promin. The chemotherapeutic effectiveness in a group of animals treated with streptomycin and compound 1 was 27.0. Seventy-five per cent of the animals in this group showed no gross evidence of tuberculosis or only doubtful and insignificant lesions, though 95 per cent of them reacted to intracutaneous tuberculin, and subinoculation tests with tissue suspensions gave positive results in nearly all cases. The combined application of streptomycin and the monogalacturonyl derivative of 4,4'diaminodiphenylsulfone in the treatment of experimental tuberculosis gave as good results as those previously reported with streptomycin and promin.

Diseases of Nervous System, Chicago

8:137-168 (May) 1947

*Asymmetry in Occipital Electroencephalograms. O. Sugar.—p. 141.
Relationship of Psychiatry to Problems of Medical Care. W. Darley.—p. 151.
Histamine Treatment of Cerebral Arteriosclerosis. J. H. Taylor.—p. 154.
Magical Thinking and Ritual to Preserve Omnipotence as Demonstrated in Cases of Compulsion Neurosis. D. C. Wilson.—p. 155.
Neurologic Clinical Pathologic Conference of the Cincinnati General Hospital. M. Rosenbaum.—p. 160.
Group Psychotherapy. M. M. Pearson.—p. 163.

Asymmetry in Occipital Electroencephalograms.—Sugar undertook a study of asymmetry in side-to-side distribution of electrical activity in the human brain, because of the occurrence of differences in routine clinical electroencephalography. Over 1,000 patients were examined by means of a four channel electroencephalograph, using the standardized army technic for electrode placement, time of recording and basic interpretation. In migraine, neurocirculatory collapse, cephalalgia, intracranial masses and intracerebral disease such as hemiplegia and hemianopsia, asymmetries appeared in numbers which are statistically significant as compared to normals. No such significant results were obtained with epileptic, psychoneurotic or psychopathic personalities, in posttraumatic syndromes and infections of the nervous system or in persons with syncope. Twenty per cent of the patients had depression of the alpha activity of the left occiput, 8.2 per cent had depression of the right occiput, and 71.8 per cent had equal amounts of alpha activity on the two sides. The corresponding figures for amplitudes were 14.1, 8.1 and 77.8 per cent. In the absence of gross cerebral abnormalities, such depressions of amplitude and alpha activity may be due to diminished blood supply to the affected side. The presence of such asymmetries is considered to be an aid in the diagnosis of migraine and other disorders of cerebral circulation.

Journal of Allergy, St. Louis

18:149-220 (May) 1947

- *Histamine Antagonists VII Comparative Antianaphylactic Activity of Some New Antihistaminic Drugs J M Rose, A R Feinberg, S Friedlaender and S M Feinberg —p 149
- Lysis in Vitro of Sensitized Leukocytes by Ragweed Antigen T L Squier and H J Lee —p 156
- Pollen Tolerance Its Bearing on Treatment of Hay Fever F M Rackemann —p 164
- *Contact Type Eczematous Dermatitis Modern Classifications and Remarks on Therapy M B Sulzberger —p 176
- Occupational Dermatitis with Special Reference to Eczema Dermatitis *of Hands J A Tolmach —p 179*
- Some Problems of Atopic Dermatitis in Infancy and Childhood L W Hill —p 181
- Atopic Dermatitis in Infants Children and Adults with Special Reference to Role of Inhalants and Dander F A Simon —p 186
- *Antibodies to Ragweed Extract Demonstration by Collodion Particle* Technic in Immune Rabbit Serum but Not in Serum of Treated Patients O Swineford Jr and R Houlihan —p 190
- Anaphylactogenic Properties of Heparin in Guinea Pig J Luiz Cortes M Grolnick and L Loewe —p 196
- *Blood Studies in Allergy IV Variations in Eosinophils Following Test* Feeding of Foods T G Randolph —p 199
- Sensitizing Factor in Merthiolate F A Ellis —p 212
- Allergy (Asthma) to Ingested Gum Tragacanth Case Report E B Brown and S B Crepea —p 214

Histamine Antagonists.—Rose and his co-workers determined the protective effect of antihistaminic drugs by injection of histamine in the dorsal vein of the penis of the guinea pig fifteen minutes after the animal had received the protecting drug intraperitoneally. Anaphylactic experiments were carried out by intracardiac injections of horse serum forty eight hours after intraperitoneal administration of pooled rabbit anti-horse serum. Protection against anaphylaxis was afforded by methods similar to those used against histamine. Studies parallel to those conducted in anaphylaxis in the intact animal were carried out on the sensitized intestinal strip of the guinea pig. The protection afforded against anaphylactic shock by the antihistaminic drugs studied (benadryl, pyribenzamine, antergan and neoantergan) decreases as the amount of the drug is decreased. All the compounds studied showed essentially similar protection against anaphylaxis. Observations on the sensitized intestinal strip of the guinea pig bear out the lack of difference of protection rendered by benadryl and neoantergan in anaphylaxis in the intact animal. Against a single lethal dose of histamine the antihistaminic drugs studied are almost equally effective. Observations on the sensitized intestinal strip indicate that the anaphylactic contraction was inhibited by an amount of antihistaminic drug which had no effect on the contraction of the same magnitude due to histamine.

Contact Type Eczematous Dermatitis.—According to Sulzberger, allergic contact type eczematous dermatitis is to be considered as an entity which is (1) by definition "allergic," (2) which is usually produced by contact of the sensitized skin cells with the allergen coming from without and (3) which is a dermatitis that presents the clinical and histopathologic picture characteristic of eczematous changes. Both prognosis and therapy of this dermatitis are different from those of seborrheic dermatitis, nummular eczema, atopic dermatitis or many forms of dermatitis due to direct damage by chemical and physical agents. Prevention and treatment must be confined to the discovery and elimination or reduction of contact with the causal allergen and, in addition, to the appropriate forms of local dermatologic management.

Journal of Gerontology, Springfield, Ill.

1:411-498 (Oct) 1946

- Dawn of Gerontology F Hinman —p 411
- Effect of Aging on Course and Outcome of Pregnancy L M Hellman —p 418
- Effect of Coffee, Human Diet and Inheritance on Life Span of Rats Gladys A Sperling, J. K Loosli, L L Barnes and C M McCay. —p 426
- Size of Somatic Chromosomes at Different Ages in Rat J J Biesele —p 433
- Some Chemical Changes in Human Thoracic Aorta Accompanying Aging Process V C Myers and W W Lang —p 441
- Effect of Yeast Nucleic Acid on *Survival Time of 600 Day Old Albino* Mice T S Gardner —p 445
- Effect of Sodium Thiocyanate and Yeast Nucleic Acid on Survival Time of 700 Day Old Albino Mice T S Gardner and F B Forbes —p 453

Journal of Lab. and Clinical Medicine, St. Louis

32:475-582 (May) 1947 Partial Index

- Mechanism of Thymol Turbidity Test P P Cohen and F L Thompson —p 475
- Study of Serum Biliverdin Concentration in Various Types of Jaundice E A Larson, G T Evans and C J Watson —p 481
- Differential Agglutination of Human Erythrocytes Evaluation of Technic I F Young, R I Platzer and J A Rafferty —p 489
- Fibrinogen Deficiency Clinical Features and Probable Etiologic Factors I B Yeager, P S Rhoads and S Freeman —p 502
- Biochemical Studies During Malarial and Artificial Fevers E A Gall and A Steinberg —p 508
- Normal Sedimentation Rates in Active Pulmonary Tuberculosis Study of 1 066 Cases in a Naval Tuberculosis Center T H Noehren —p 526
- Simplification of the Serologic Diagnosis of Salmonella Cultures F Kauffmann and P R Edwards —p 548
- *Prothrombin Time and Variables in the Method J W Martin, G H* Curfman Jr and I I Cavano —p 554

Journal National Malaria Society, Tallahassee, Fla.

6:1-90 (March) 1947 Partial Index

- A Review of Studies on Immunity to Vivax Malaria M F. Boyd —p 12
- *Records of Mosquito Dissections in Northern New Guinea J P Toffa*leti and W V King —p 32
- **Toxic Reactions Following Administration of Atabrine Dihydrochloride* P K Smith —p 37
- A Malaria Reconnaissance of the Republic of Haiti J Harland Paul and A Bellerive —p 41
- Standardization of Test for Antimalarial Effect with Plasmodium Cathe*merium in the Canary W D Gingrich and Eugenia W Schoch* —p 68
- Studies on Serology of Malaria Malarial Precipitation Reactions with Lipid Antigen R L Kahn, A H Wheeler and C Adams —p 74

Toxic Reactions of Atabrine Dihydrochloride.—Reviewing observations made on air force personnel, Smith says that the administration of atabrine dihydrochloride in certain doses is associated with a high incidence of gastrointestinal disturbances. The suppressive doses associated with the highest toxicity were those in which 0.2 Gm or more was given as a single dose twice a week on nonconsecutive days. Toxic reactions were infrequent with daily doses of 0.1 Gm.

Journal of Pediatrics, St. Louis

30:485 644 (May) 1947

- Presidential Address J I Durand —p 485
- Deficits in Diarrhea J L Gamble —p 488
- Rickettsial Diseases of Childhood Clinical Pathologic Study of Tick Typhus, "Rocky Mountain Spotted Fever," Murine Typhus and "Endemic Typhus" J C Peterson, J C Overall and J L Shapiro —p 495
- Early Evidence of Psychoses in Children Special Reference to Schizophrenia C Bradley —p 529
- *Streptomycin A Review J Ehrlich —p 541*
- *Osseous Congenital Syphilis Effects of Penicillin on Rate of Healing A J Hill Jr, R V Platou and J T Kometani —p 547
- Celiac Syndrome Relationship of Celiac Disease, Starch Intolerance and Steatorrhea Dorothy H Andersen —p 564
- *Evaluation of Benadryl, Pyribenzamine and Other So Called Antihistaminic Drugs in Treatment of Allergy B Ratner —p 583
- Genitourinary Conditions in Infants and Children H L Kretschmer —p 603

Penicillin in Osseous Congenital Syphilis.—Hill and his associates show that osseous congenital syphilis is a dynamic process which waxes and wanes as the infant grows older. Control data were derived from 134 roentgenographic observations on 98 infants before penicillin therapy was started. Inspection of the curve for total severity of untreated lesions shows that 1 to 90 days of age represents the period of increasing severity, 91 to 210 days that of rapidly decreasing severity, 211 to 365 days that of moderate decline, and 13 to 24 months that of slow decline. Improvement results from decreasing severity of osteomyelitis and osteochondritis, periosteal changes increase in prominence over a longer period and persist as the commonest residuums. The course of a given lesion cannot be accurately predicted. Dosages of penicillin employed so far have temporarily accelerated healing of osseous syphilis only in infants treated during the first three months of life. This acceleration occurs principally in osteochondritis and osteomyelitis, simultaneous improvement in periostitis is only of probable significance. No such significant effects were observed among those treated during the next four months. The mode of healing for any particular type of lesion, as herein described, has not been evaluated. *Increase in severity of these lesions during* or shortly after penicillin therapy occurs in an age group in which this phenomenon is to be expected without treatment. Pseudoparalysis disappears without specific changes in the roentgenograms; indeed, osseous lesions may even appear worse after pseudoparalysis subsides.

Evaluation of Antihistaminic Drugs in Allergy.—Ratner arrives at the conclusion that the release of histamine has not yet been proved to be the fundamental factor in anaphylaxis or allergic reactions; hence any therapy based on such a concept must be called into question. Benadryl and pyribenzamine and other drugs of this group have not been proved to be antihistaminic, either chemically or pharmacologically. These drugs have not proved of value in the eradication of allergic syndromes. They do not appear to prevent the entrance of antigen into the circulation and the antigen-antibody reaction. It is the nature of the allergic episode to be self limited, and it is often spontaneously terminated. For this reason a wide variety of drugs seem to relieve it. Benadryl and pyribenzamine alleviate symptoms of diverse allergic conditions. The greatest benefits are derived in acute urticaria and hay fever in allaying pruritus and nasal and lacrimal discharges. These drugs should have a place along with epinephrine, ephedrine and atropine as excellent antispasmodics. They are not as efficient in asthma and eczema, the more chronic and fixed syndromes. These drugs must be used vigilantly because they may have serious side effects which may affect the higher brain centers. They deserve a place in our armamentarium as symptomatic remedies, but the author deplores that some physicians and particularly the lay public, as a result of widespread publicity, feel that they are cures.

Journal of Urology, Baltimore

57:789-948 (May) 1947. Partial Index

Testis Biopsy in Infertility. E. T. Engle.—p. 789.
Unusually Large Pelvic Hydronephrosis Treated by Excision of Kidney Cap. M. Paul.—p. 799.
Fibrin Foam and Gelfoam in Experimental Kidney Wounds. S. A. MacDonald and W. H. Matthews.—p. 802.
*Gelfoam Hemostasis in Prostatic Surgery. S. A. MacDonald and R. E. Powell.—p. 812.
Use of Absorbable Gauze (Oxidized Cellulose) in Urologic Surgery. J. K. De Vries.—p. 816.
Use of Gelfoam in Transurethral Resection. N. J. Heckel and J. I. Waller.—p. 828.
Agenesis of Right Kidney with a Retroperitoneal Cyst Arising in a Persistent Metanephros. M. F. Weingarten, J. M. Orem and O. C. Cox.—p. 829.
Effects of Overdistention of the Renal Pelvis and Ureter: Study on Pyelovenous Backflow. H. C. Rolnick and P. L. Singer.—p. 834.
Aneurysm of Hypogastric Artery Producing Urinary Tract Obstruction: Report of Case. W. E. Goodwin and H. B. Schumacker Jr.—p. 839.
Reimplantation of Ureter into Bladder by Flap Method. N. F. Ockerblad.—p. 845.
Vaginal Cystectomy. V. F. Marshall and M. Schnittman.—p. 848.
Pseudosphincter Formation in Neurogenic Bladder. C. Ney, O. Auerbach and T. I. Hoen.—p. 858.
Foreign Body (Kirschner Wire) Removed from Bladder. D. W. Branham and H. M. Richey.—p. 869.
Treatment of Chronic Nonspecific Prostatitis with Oral Penicillin. R. D. Herrold.—p. 897.
Synergistic Action Between the Sulfonamides, Certain Dyes and Streptomycin Against Gram-Negative Bacteria: Preliminary Report. F. S. Thatcher and J. T. MacLean.—p. 902.
Streptomycin in Genitourinary Infections. C. Ferguson and T. S. Hershey.—p. 932.

Gelfoam Hemostasis in Prostatic Surgery.—According to MacDonald and Powell fibrin foam fulfilled all criteria of an ideal hemostatic agent for prostatic surgery, but more recently there has been produced a synthetic substance called gelfoam. It closely resembles fibrin foam in appearance, is used in exactly the same way and possesses all the desirable characteristics of the original substance. It is available for clinical use in the form of small wafers. The authors review observations on 15 cases, in 3 of which fibrin foam was used and in the other gelfoam. In 1 of these cases hemostasis was not satisfactory. In this case the bleeding was probably arterial in type. In all other cases almost complete hemostasis was achieved. No clots formed in any case, the drainage fluid was never more than pale pink and within forty-eight to seventy-two hours it became perfectly clear. The authors think that with the use of either gelfoam or fibrin foam the mortality rate of prostatic surgery should be considerably reduced, since shock due to excessive bleeding has always been an important cause of its mortality.

Nebraska State Medical Journal, Lincoln

32:177-212 (May) 1947

Compound Fractures. W. L. Sucha.—p. 179.
Clinical Manifestations of Syphilis. D. J. Wilson.—p. 182.
Ancylostomiasis. H. H. Zinneman.—p. 185.
Nasal Physiology in Dietary Deficiency. L. P. Coakley.—p. 187.
Management of Cervicovaginal Disorders. J. J. Grier.—p. 191.
Absorbable Sponge as a Hemostatic Agent. J. C. Kennedy.—p. 194.
Principal Causes of Maternal Deaths in Nebraska, 1940-1945. W. E. Rapp.—p. 198.

32:213-256 (June) 1947

Urticaria and Allied Dermatoses. A. C. Curtis.—p. 220.
Care of Child with Rheumatic Heart Disease. J. A. Henske.—p. 223.
Clinical Aspects of Rheumatic Fever. C. Moore.—p. 225.
Evaluation of Laboratory Procedures in Rheumatic Fever. P. N. Morrow.—p. 227.
Prevention of Rheumatic Fever. J. M. Thomas.—p. 230.
Treatment of Rheumatic Fever. C. A. Tompkins.—p. 231.
Management of Urinary Tract Emergencies by General Practitioner. L. W. Lee and E. Davis.—p. 234.

New Orleans Medical and Surgical Journal

99:545-598 (May) 1947

Anthrax in Louisiana. R. H. Heeren.—p. 545.
*Status of Abortus Infections in the United States. H. J. Schmidt.—p. 552.
Toxic Effects of Digitalis. A. N. Evans.—p. 555.
Infection of Mouth and Pharynx: Report of 98 Cases. F. L. Bryant.—p. 566.
Sigmund Freud. G. L. Usdin.—p. 569.

Brucellosis in the United States.—According to Schmidt, the majority of the cases of brucellosis in the United States are of the abortus variety. In consideration of the widespread prevalence of the organism in milk and dairy products, it is not surprising that the abortus variety should attain a more rapid and greater attenuation than would the suis or melitensis types. The true incidence of the disease is not known, but the widespread distribution of the organism in milk and the attenuation of it by the cow over many years has resulted in a chronic and obscure disease most difficult to diagnose and obstinate to treat. The attenuation of Brucella abortus has detracted much from the value of laboratory procedures for diagnosis.

New York State Journal of Medicine, New York

47:657-800 (April 1) 1947

Laboratory and Clinical Criteria of Rheumatic Carditis in Children. L. M. Taran.—p. 703.
*Effect of Ultraviolet Air Sterilization on Incidence of Respiratory Infections in a Children's Institution: Six Year Study. R. A. Higgons and Gertrude M. Hyde.—p. 707.
New Rickettsial Illness Occurring in New York City: Supplementary Report. B. Shankman and K. Gardens.—p. 711.

47:801-928 (April 15) 1947

Physical Medicine in Traumatic Injuries. G. G. Deaver.—p. 847.
Physical Therapy in Treatment of Arthritis. L. Maxwell Lockie and E. Musgrove.—p. 851.
Place of Physical Medicine in Treatment of Patients with Mental Conditions. B. Simon.—p. 854.
Comments on Army Radiology in World War II. E. K. Reid.—p. 858.
Pediatric Approach to Management of Asthma in Childhood. B. Ratner.—p. 861.
Possibility of Preventing Breast Cancer in Women: Is Artificial Feeding of Infants Justified? L. Gross.—p. 866.
An Anthropologist Looks at American Indian Medicine. A. C. Parker.—p. 868.
Medicine in New York Folklore. H. W. Thompson.—p. 870.
Is General Practice Becoming a Specialty? H. L. Nelms.—p. 874.

Effect of Ultraviolet Air Sterilization in Children's Institution.—Installation of ultraviolet radiant units in the children's building of St. Luke's Convalescent Hospital subjects every cubic foot of air in the building to a sterilizing effect equivalent to more than 100 complete air changes per hour. The output of the bulbs is tested periodically with a Luckiesh-Taylor ultraviolet meter containing a special fluorescent material whose maximum sensitivity is for 2,537 angstroms radiation. If the efficiency of the lamps falls below 75 per cent of their original output the incidence of infection begins to rise. Frequent dusting of the lamps is important. During 1943 the lights were turned off for several months because of a shortage of bulbs, and the incidence of infections showed an upward trend. During the three year control period 3.98 per cent of the children were febrile, as against 2.38 per cent for the three year experimental period. This shows a difference of 1.60 per cent, or eleven times the standard error of the difference. Comparison of the control and experimental periods during the winter months alone again shows a difference of 1.96 per cent, which is again eleven times the standard error of the difference. These figures indicate a reduction of 33 per cent in the number of children febrile from respiratory disease for the treated years as against the untreated years. House plants do not tolerate the ultraviolet radiation and usually die. Otherwise there have been no deleterious effects from the lights. The children have no difficulty in sleeping in the faint glow, which resembles moonlight. The attendant staff soon observed that the usual children's institution odor had completely disappeared, and some of the nurses commented on the freshness of the atmosphere.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

64:385-518 (April) 1947. Partial Index

*Low Toxicity of Sulfonamide Mixtures Combinations of Sulfathiazole, Sulfadiazine and Sulfamerazine. D. Lehr —p 393.

In Vitro Sensitivity of Brucella to Streptomycin: Development of Resistance During Streptomycin Treatment. W H Hall and W W. Spink —p. 403.

Epithelial Keratinization as Evidence of Fetal Vitamin A Deficiency J. G. Wilson and J. Warkany —p. 419.

Further Studies on the Acute Toxicity of Mercurial Diuretics R. A. Lehman.—p. 428

*Reactions of Human Body Louse (Pediculus Humanus Corporis) to the Ingestion of Guinea Pig Blood V Cabasso —p 437.

*Mass Infection of Body Lice with Rickettsia Prowazeki. V. Cabasso. —p. 439

Effect of Pentaquine in Patients with Hypertension. E. D. Freis and R. W. Wilkins.—p 455.

Studies on Cigaret Smoke Irritation· Determination of Edema Producing Properties of Certain Types of Cigaret Tobaccos P. S. Larson, H. B. Haag and J. K. Finnegan —p 476.

Pharmacologic Characteristics of Bacitracin. J V. Scudi and W. Antopol. —p. 503

Low Toxicity of Sulfonamide Mixtures.—Lehr studied the toxicity, the absorption and the excretion of the combinations sulfadiazine-sulfathiazole, sulfadiazine-sulfamerazine and sulfadiazine-sulfathiazole-sulfamerazine in albino rats. These combinations of partial dosages proved significantly less toxic than any one of their separate constituents in equal or comparable total dosage. The mixture of three sulfonamides was less toxic than either combination of two drugs. Mixtures of sulfonamides were more completely absorbed and excreted than equal amounts of their individual constituents. Blood levels from mixtures were distinctly higher than expected on the basis of mathematical computations from the values of single sulfonamides. It was reasoned that the use of a mixture containing three sulfonamides in human therapy would almost completely eliminate the possibility of concrement formation in the urinary tract at the routine dose level.

Reaction of Human Body Louse to Ingestion of Guinea Pig Blood.—Experiments reported by Cabasso indicate that, contrary to general belief, guinea pig blood per se is not toxic to the human body louse. Although experiments proved that the red blood cells of guinea pigs remain undigested in the intestine of the louse, additional experiments proved that lice fed once on guinea pig blood live their normal life span when their daily feedings are continued subsequently on human blood.

Mass Infection of Lice with Rickettsia Prowazeki.—Cabasso demonstrates that human body lice fed once on a typhus infected guinea pig at the height of the febrile period, and subsequently fed on a typhus immune human being, develop massive infection with Rickettsia prowazeki. In comparison with the rectal inoculation of lice for the preparation of the Weigl type typhus vaccine, this method of infecting lice seems to offer certain advantages.

Public Health Reports, Washington, D. C.

62:629-668 (May 2) 1947

*Studies of Fungus Antigens: Quantitative Studies of Cross Reaction Between Histoplasmin and Blastomycin in Guinea Pigs. A. Howell Jr. —p. 631.

Communitywide Chest X-Ray Surveys: Introduction to the Problem. F. J. Weber.—p. 652.

Cross Reactions Between Histoplasmin and Blastomycin.—Howell says that the specificity of the histoplasmin reaction in man has become of great importance since the demonstration of a high degree of correlation between pulmonary calcification and sensitivity to histoplasmin in individuals who do not react to tuberculin. Three lots of histoplasmin and five of blastomycin and heat-killed antigens prepared from yeast cultures of Histoplasma capsulatum and Blastomyces dermatitidis have been tested on guinea pigs experimentally infected with Histoplasma capsulatum and Blastomyces dermatitidis. It has been shown that the number of experimentally infected guinea pigs which reacted to histoplasmin, blastomycin or the heat-killed yeast phase antigens depends on the particular lot of antigen and its dilution. If the critical titers of these antigens are determined and if these concentrations are used to study cross reactions, the degree of cross reaction between these antigens is small and the antigens are therefore relatively specific for guinea pigs experimentally infected with the homologous fungi. It is necessary to consider the degree of sensitivity of the animals employed to determine the titer of an antigen, that is, if the sensitivity level is low, a high concentration of the antigen will have to be used to elicit a reaction, and therefore a false impression of the critical titer of the antigen will be obtained. Such high concentrations of antigen will produce a high percentage of cross reactions.

Southern Medical Journal, Birmingham, Ala.

40:369-454 (May) 1947. Partial Index

*Sulfasuxidine and Sulfathalidine in Surgery of Colon. E. J. Poth. —p. 369.

*Translumbar Aortography: Aid in Management of Hydronephrotic Kidney. A. K. Doss.—p. 376.

Vagal Resection in Treatment of Gastroduodenal Ulcer. J. S · Lastra and P. P. Nobo —p. 382.

Diagnosis and Treatment of Cardiospasm. P. P. Vinson —p. 387.

Treatment of Fibrosarcoma. I. A. Bigger.—p. 392.

Comparative Clinical Values of Some New Drugs in Pyodermas. H. M. Robinson and H. M. Robinson Jr.—p. 409.

Diagnoses Commonly Missed in General Practice. M. P. Neal.—p. 414.

Practical Handling of Bacteriology by Clinical Pathologist. Emma S. Moss.—p. 427.

Retarding Denervation Atrophy. G. C. Knowlton.—p. 432.

Irradiation Therapy of Benign Uterine Hemorrhage. I. H. Lockwood, A B. Smith and J. W. Walker.—p. 435.

Vascular Mechanisms in Allergic Headaches. C. B. Shuey.—p. 440.

Use of Succinylsulfathiazole and Phthalylsulfathiazole in Surgery of Colon.—Poth shows that evidence has been accumulating over the past five years which indicates that succinylsulfathiazole and phthalylsulfathiazole, when properly administered, are bacteriostatic agents which will modify the bacterial flora of the bowel contents, allow a satisfactory preoperative mechanical preparation of the colon, favor early healing of the colon at the line of suture and reduce the incidence of postoperative peritonitis and wound infection. The judicious use of these drugs during the preoperative and postoperative surgical periods decreases the operative mortality following colonic surgery and simplifies the surgical procedures. The proper use of succinylsulfathiazole and phthalysulfathiazole requires that they be used as adjuvants to and not as substitutes for established surgical practices.

Translumbar Aortography in Management of Hydronephrotic Kidney.—Doss points out that poor concentration of radiographic mediums or the apparent delay in excretion of a substance used in determining renal function no more justifies the removal of an enlarged hydronephrotic kidney than does a reasonably normal retrograde pyelographic shadow in an unobstructed poorly functioning kidney necessarily demand its preservation. When employing various solutions and mediums in an attempt to determine the true worth of the kidney, too much attention has been paid to the anatomic appearance of the kidney, at the same time giving too little attention to the effect the dilution factor of accumulated urine within the pelvis has on the mediums employed to estimate function. Actually, the enlarged and seemingly worthless kidney may be a better unit functionally and therefore more capable of sustaining life than the other more normal looking one. It has been the author's practice to obtain an arteriogram before renal exploration Pursuing the policy that a kidney is no better than its arterial supply he has chosen, when surgery seemed indicated, to spare no effort to preserve the hydronephrotic kidney presenting a good blood supply. He thinks that we should be far more conservative about removing hydronephrotic kidneys, particularly in the younger age group, than has been the custom.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

70:1-108 (March) 1947

General Principles of Nervous Activity (Hughlings Jackson Lecture). E. D. Adrian.—p. 1.
*Prefrontal Leukotomy: Neuroanatomic Report. A. Meyer, E. Beck and T. McLardy.—p. 18.
*Disease of Nervous System Occurring Among Research Workers on Swayback in Lambs. A. M. G. Campbell, P. Daniel, R. J. Porter, W. R. Russell, H. V. Smith and J. R. M. Innes.—p 50
Some Physical Aspects of Encephalography E. G. Robertson.—p. 59.
Selection and Use of Autografts for Bridging Gaps in Injured Nerves. S. Sunderland and L. J. Ray.—p. 75.
On the Notion of the "Discrete Movement": A Critical Note. F. M. R. Walshe.—p. 93.

Neuroanatomic Report on Prefrontal Leukotomy.—In a paper published in 1945 Meyer and his associates dealt with the therapeutic and psychiatric aspects arising out of prefrontal leukotomy. In the present review they deal exclusively with neuroanatomic investigations carried out on patients dying at various intervals after prefrontal leukotomy. The report is concerned with 7 leukotomized and 1 lobectomized human hemispheres.

Disease of Nervous System Occurring Among Workers Investigating Swayback in Lambs.—According to Campbell and his associates swayback is a paralytic disease of newborn and young lambs which occurred in many parts of Britain. The symptoms consist of ataxia and paralysis, the lambs either walking with a staggering gait or being completely paralyzed and unable to rise. The pathology is a symmetrical cerebral demyelination and degeneration of the motor tracts. Four of 7 persons who worked intensively on the demyelinating disease known as swayback in lambs developed a disease of the central nervous system clinically indistinguishable from disseminated sclerosis. This might be due to a heretofore unidentified occupational hazard of chemical research workers or it might also indicate that there is some causal connection between swayback and disseminated sclerosis, and some consideration has been given to speculation along these lines, viz. to some common infective agent acting only in the presence of a trace element deficiency. As swayback is a demyelinating disease and can be prevented by copper therapy, it is apparent that trace element deficiencies should be considered in connection with analogous diseases of man.

British Medical Journal, London

1:627-666 (May 10) 1947

Some Problems in the Titration of Streptomycin. J. R. May, A. E. Voureka and A. Fleming.—p. 627.
Physical Health of Children Attending Day Nurseries: Report to Day Nurseries. Committee of the Medical Women's Federation. Margaret E. McLaughlin.—p. 631.
*De Morgan's Spots. A. R. Murison, J. W. Sutherland and A. M. Williamson.—p. 634.
Relapsing Fever in Cyrenaica. N. F. Coghill, J. Lawrence and I. D. Ballantine.—p. 637.
Two Cases of Ferrous Sulfate Poisoning. J. Thomson.—p. 640.

De Morgan's Spots.—According to Murison and his associates the minute round ruby colored macules known as De Morgan's spots are of common occurrence in adults. They are most often seen in the skin of the abdominal wall. They vary in size up to a diameter of about 5 mm. and in number up to twenty or occasionally more. Microscopically they have the character of simple hemangiomas. The authors discuss a possible connection with cancer. In order to obtain more data on the incidence and significance of these spots they studied their occurrence in 1,300 patients at three Glasgow hospitals. No difference was found in sex incidence. The proportion of hospital patients with ruby spots rises from 5 per cent in adolescence to about 75 per cent at 70 years of age. The spots also increased in number and size with advancing age, but their rate of growth decreased. De Morgan's spots were slightly commoner in malignant than in nonmalignant disease but not sufficiently so to be of diagnostic importance.

Edinburgh Medical Journal, London

54:129-188 (March) 1947

Evolution, Function and Scope of the Medical Society. E. Bramwell.—p. 129.
Surgery in Japanese Prison Camp on Singapore Island. J. A. P. Cameron.—p. 140.
Viral Infections of Chick Embryo Respiratory Tract: I. Control Observations. J. H. Fodden.—p. 151.
Treatment of the Deaf: Hearing Aids and Their Modern Conception. G. E. Martin.—p. 158.
Operative Treatment of Nonsuppurative Middle Ear Deafness. I. S. Hall.—p. 167.
Periarteritis Nodosa.—p. 171.
Some Practical Considerations in Surgery of Hand and Fingers. E. L. Farquharson.—p. 175.

Indian Medical Gazette, Calcutta

82:47-112 (Feb.) 1947. Partial Index

*Postmortem Appearances in Tropical Eosinophilia. R. Viswanathan.—p. 49.
Foreign Body Localization: Ring Method. E. J. Somerset.—p. 50.
Cause, Symptoms and Treatment of Lathyrism: Specific Nutritional Neuropathy. H. Jacoby.—p. 53.
Male Hormones for the Prevention of Relapses in Malaria. S. J. Gross.—p. 65.
Paul-Bunnell Test in Diagnosis of Glandular Fever, with Report of 7 Cases. D. W. Soman.—p. 69.

Postmortem Aspects of Tropical Eosinophilia.—Viswanathan says that since there have been no deaths from tropical eosinophilia the pathologic aspects of the condition have been a matter of speculation. He made postmortem studies on a man aged 28 who died of arsenical encephalopathy after the second injection of neoarsphenamine. The microscopic appearances in this case were suggestive of an infective process rather than an anaphylactic reaction. The lesions are peribronchial and not perivascular. The microscopic changes suggest that infection in tropical eosinophilia is probably by inhalation and that the infecting agent gets into the peribronchial tissue and sets up an inflammatory process involving the interstitial tissue mainly and alveoli partially. Discrete scattered areas of cellular infiltration, monocytic and eosinophilic, are produced. When the process becomes chronic, nodules containing giant cells and monocytes are formed. The disseminated mottled shadows seen in the x-ray films of cases of tropical eosinophilia and which last only for a short period are probably due to the areas of cellular infiltration with monocytes and eosinophils. In some cases the mottling lasts for months. In them the shadows might be due to the presence of giant cell nodules.

Journal of Mental Science, London

93:1-200 (Jan.) 1947

Intelligence as a Social Problem. F. C. Bartlett.—p. 1.
Ten Years' Experience of Insulin Therapy in Schizophrenia. R. K. Freudenberg.—p. 9.
Personality Changes After Leukotomy. E. L. Hutton.—p. 31.
Fear Factors in Flying Personnel. W. A. S. Falla.—p. 43.
"Creative Spell" of Schizophrenics After Leukotomy. F. Reitman.—p. 55.
Depersonalization Syndrome. G. T. Stockings.—p. 63.
*Nature and Treatment of "Writer's Cramp." M. Narasimha.—p. 68.
Intelligence of Male Noninstitutional Epileptics of Military Age. J. G. Sheps.—p. 82.
Intensive Electrical Convulsion Therapy in Acute Mania. F. T. Thorpe.—p. 89.
Concept of "Psychopathy" and Treatment of So-Called "Psychopaths." O. Kinberg.—p. 92.
Methods of Officer Selection in the Army. S. W. Gillman.—p. 101.

Writer's Cramp.—Narasimha says that writer's cramp, graphospasm or mogigraphia may be defined as a condition of incoordination of the small muscles of the hand which appears only when one attempts to write. The various names given to this condition emphasize that cramp or spasm is the predominant feature. As the principal nerves and muscles are often intact and movements of a wider range can be carried out efficiently, the condition appears to be a functional disturbance of coordination. Among the etiologic factors, overwork and excessive use of the hand for writing have been stressed. Janet includes the condition among the symptoms of "psychasthenia." Strümpell pointed out that this condition was often associated with a nervous constitution and that neurasthenic symptoms were often present *in persons suffering from writer's cramp.* The author found that 171 out of 1,880 (or approximately 1 in 11) patients suffering from neuropsychiatric conditions showed some incoordination of the muscles of the hand resulting in writing disturbances. Those in whom the *tremulous form* of writing was found had acute and severe anxiety neurosis. Those in whom the spastic or cramped form of writing was found, as well as those who showed the ataxic or jerky form of writing, had neurosis with hysterical reactions. Those who showed the paralytic form of disturbance, characterized by slovenly and almost illegible writing, were suffering from organic disease of the central nervous system. The term "writing disturbance" has been suggested instead of the name "writer's cramp."

Lancet, London

1:583-622 (May 3) 1947

Foundations of Academic Freedom. M. Polanyi.—p. 583.
*Antithyroid Activity of Ergothioneine: Normal Component of Blood. A. Lawson and C. Rimington.—p. 586.
Results of Parallel Kahn and Wassermann Tests in Relation to Penicillin Therapy of Syphilis. J. F. Heggie, J. G. Maguire, M. M. Bull and R. M. Heggie.—p. 588.
*Pethidine Addiction. P. Polonio.—p. 592.
Distribution of Penicillin in Eye After Subconjunctival Injection. G. W. S. Andrews.—p. 594.
Multiple Pressure Vaccination. R. H. Mole.—p. 597.
Unusual Cause of Irritative Median Neuritis in Hand. P. D. Bedford.—p. 597.

Antithyroid Activity of Ergothioneine.—Lawson and Rimington point out that the discovery of the goitrogenic action of thiourea has led to an investigation of the activity of many types of thiol compounds. Thiouracil and its more active propyl derivative have been proved valuable in the treatment of hyperthyroidism, but these drugs have the disadvantage of producing toxic symptoms such as agranulocytosis. Since all the symptoms heretofore tested have been products foreign to the animal body, it was felt that ergothioneine, a *normal constituent of* blood, which belongs to the same chemical type, would be worthy of investigation. Ergothioneine is methyl betain of 2-thiolhistidine. The ergothioneine used in this work was isolated from ergot of rye. It was *observed that when ergothioneine* was administered subcutaneously to rats it exerts an antithyroid activity comparable with that of thiouracil. The possibility of using ergothioneine as a therapeutic agent which might be less likely than the synthetic compounds to produce toxic symptoms comes to mind, and this aspect of the problem is receiving attention.

Meperidine Hydrochloride (Demerol) Addiction.—Polonio says that in 1944 he and Barahona collected 17 cases of meperidine addiction from the literature with 3 deaths and presented 6 cases of their own with 1 death. Since then he has observed 9 more cases of meperidine addiction with 1 death. He stresses that the *therapeutic use of meperidine can be the source of* dangerous addiction and that it should be used with the same precautions as are required with morphine. Special care must be observed with certain personalities of the psychopathic type. *Tolerance and physical dependence are easily acquired.* Symptoms of intoxication are frequent and severe and may be cause of death. In 32 reported cases there were 5 deaths. Though the physical dependence and abstinence symptoms are not so intense as with morphine, the quicker habituation and more serious intoxication effects may well make meperidine a more dangerous drug.

1:*623-658 (May 10) 1947*

Backache. B. H. Burns and R. H. Young.—p. 623.
*Streptomycin in Experimental Plague. D. Herbert.—p. 626.
Clicking *Pneumothorax.* A. P. Thomson.—p. 630.
*Hypopituitarism, Hypogonadism and Anemia Treated with Testosterone. G. Watkinson, W. H. McMenemey *and G. Evans.—p. 631.*
Use of Curare in Electric Convulsion Therapy. J. F. Donovan.—p. 634.
Treatment of Tropical Sprue with Folic Acid. R. J. G. Morrison and C. R. St. Johnston.—p. 636.

Streptomycin in Experimental Plague.—Herbert says that streptomycin has given good results in the treatment of tularemia. *Streptomycin inhibits* the growth of the plague bacillus in vitro and in certain concentrations brings about rapid sterilization of plague cultures. In mice infected subcutaneously *with a highly virulent plague strain,* in dosage sufficient to kill 100 per cent of control animals, two and one-half day courses of streptomycin injections (800 units a day) at once and twenty-four and forty-eight hours after infection gave 85, 60 and 5 per cent survival. A dosage of 1,600 units a day for three and one-half days gave better results. In guinea pigs infected by subcutaneous injection, three and one-half day courses of streptomycin injections (40,000 units per kilogram daily) gave *100 per cent survival,* even when dosage was delayed for forty-eight hours after infection. Streptomycin is equally *effective in the treatment of artificially induced pneumonic plague* in both mice and guinea pigs. Penicillin and sulfathiazole also inhibit *the growth of Pasteurella pestis,* which in vitro appears more sensitive than most gram negative organisms to these drugs. In comparative tests in infected mice, however, streptomycin was considerably more effective than sulfathiazole, and penicillin was only slightly effective even in very high dosage.

***Hypopituitarism, Hypogonadism and Anemia Treated* with Testosterone.**—Watkinson and his associates point out that the pituitary plays a part in hemopoiesis, polycythemia being associated with basophilism, and anemia with hypopituitarism. The 2 cases of hypopituitarism and hypogonadism described here are unusual in that the associated anemia was resistant to treatment with liver, thyroid or iron but responded dramatically to injections of testosterone propionate. These 2 patients were men of 20 and 52. In the belief that testosterone might benefit other refractory anemias it was administered to 2 other patients whose anemia had proved resistant to treatment but in whom no evidence of pituitary or gonadal deficiency was present. The drug failed in these patients to have any persistent beneficial effect, confirming that it would be effective only in the presence of gonadal deficiency. The drug induced a temporary remission in 1 case, suggesting that it is worth a trial in refractory anemias, especially if associated with a hypocellular marrow. The evidence produced shows that hypogonadism may be important in the production of anemia, and testosterone may have *a good effect in cases of this type.*

Medical Journal of Australia, Sydney

1:449-480 (April 12) 1947

Adaptation of Military Scrub Typhus Mite Control to Civilian Needs. R. N. McCulloch.—p. 449.
Diagnosis and Treatment of Anxiety States. W. E. Wilson.—p. 452.
Application of the Dermatome in Plastic Surgery. B. W. B. Riley.—p. 461.

Practitioner, London

158:377-452 (May) 1947. Partial Index

Eyestrain. S. Duke-Elder.—p. *377.*
Cataract. H. B. Stallard.—p. 383.
Infections of the Eye. T. C. Summers.—p. 394.
Treatment of Intraocular Foreign Bodies. W. J. W. Ferguson.—p. 400.
Contact Lenses. A. G. Cross.—p. 407.
Mydriatics: Some Developments. A. D. MacDonald.—p. 413.
Serum Phosphatases and Their Significance. L. M. Shorvon and Ruth Pearson.—p. 418.

158:453-524 (June) 1947. Partial Index

Modern Views on Causation of Hypertension. C. Wilson.—p. 453.
Surgical Treatment of Hypertension. J. R. Learmonth.—p. 461.
Medical Treatment of Hypertension. T. East.—p. 467.
New Anti-Histamine Drugs in Relation to the Histamine Theory of Allergy. D. Harley—p. 482.
Diagnosis of Dyspepsia. T. H. Oliver.—p. 489.

Tubercle, London

28:63-84 (April) 1947

Some Clinical and Pathologic Aspects of Tuberculosis of Central Nervous System. H. V. Smith and P. Daniel.—p. 64.

28:*85-106 (May) 1947*

Survival of Sputum-Positive Consumptives: Study of 1,192 Cases in a County Borough Between 1914 and 1940. W. H. Tattersall.—p. 85.
Towards Fluorescence Microscopy. D. B. Cruickshank.—p. 97.
A County Medical Officer Looks at Tuberculosis. K. Fraser.—p. 100.

Presse Médicale, Paris

55:261-274 (April 19) 1947

*Reflex of Rossolimo. L. Rimbaud, H. Serre and P. Passouant.—p. 261.
Lumbodorsal Sympathectomy of R. Smithwick. J. Patel.—p. 262.
Case of Primary Cancer of Liver in Girl of 3½ Years. C. N. Andriotakis and M. J. Cambylafka.—p. 363.

Reflex of Rossolimo.—According to Rimbaud and his co-workers the first description of the reflex under consideration was given in 1902 by Rossolimo, who designated it as a "deep reflex of the great toe" which is elicited by percussion of the plantar surface of the great toe in the presence of a lesion of the pyramidal bundle. Later the study of the reflex was extended to other toes. Rimbaud and his co-workers studied the reflex in various forms of hemiplegia and emphasize that it is a deep reflex resulting from an interoceptive excitation. As such it differs from cutaneous reflexes resulting from exteroceptive stimulation as does the Babinski sign. The authors conclude that Rossolimo's toe flexion reflex is obtained by plantar percussion of the intrametatarsophalangeal space. It is a latent tendinous reflex which appears in the course of a lesion of the pyramidal tract, particularly in its medullary course. It is a sign of the onset of multiple sclerosis appearing before Babinski's sign, and it may be the only manifestation of a pyramidal lesion.

Sang, Paris

17:555-626 (No. 9) 1946

Blood Transfusion in U. R. S. S. A. Bagdasarov.—p. 555.
*Distribution of Rh Group in France: Report on 15 Cases of Hemolytic Disease in Newborn. A. Tzanck and M. Bessis.—p. 558.
Biochemical Problems of Hemopoiesis. A. Aschkenasy.—p. 562.
Cytology of Blood in Imago of Forficula Auricularia L. Lucie Arvy and M. J. Lhoste.—p. 596.
Anemia Caused by Lead in Rabbits: II. Iron in Anemia Caused by Lead in Rabbits. Mrs. I. Moday and P. Chiron.—p. 603.
*Value of Determination of Hemoconcentration with Regard to Diagnosis, Prognosis and Therapeutic Indications in Shock During War. P. Royer and J. Barbizet.—p. 609.

Distribution of Rh Group in France.—Tzanck and Bessis studied fifteen erythroblastic families and found that 14 of the 15 mothers had Rh-negative blood and the one woman who was Rh positive was of the Rh_2 type and had an agglutinin anti-Rh_2 in her serum. The husbands of these women and their children had Rh-positive blood. Eleven of the 15 mothers of newborn infants with hemolytic disease had anti-Rh agglutinins in their serum; 7 of them had a standard anti-Rh agglutinin (delta); 1 had an anti-Rh_2 (H) agglutinin and 1 had a standard anti-Rh agglutinin in incomplete form (delta^1) and 2 had a mixture of anti-Rh and anti-Rh_1 (gamma + delta) agglutinins. This study demonstrated that statistics of Rh groups among the French white population are similar to those of the white population in England and in the United States. So far only two of the five types of antiserum discovered in the latter countries proved usable in the fifteen families studied. The other three types of antiserum are rare.

Hemoconcentration in Shock.—Royer and Barbizet failed to demonstrate hemoconcentration either on single or on repeated hematologic examination of 28 wounded soldiers with shock. These soldiers had sustained wounds of the abdomen, thorax, extremities, face and neck. There was no relationship between the intensity of the shock and the concentration of the red blood corpuscles. In 3 of the wounded a concentration of red blood corpuscles slightly above the normal and a relatively increased arterial tension were in contrast to the clinical symptoms of definite shock and the fact that these soldiers had suffered severe loss of blood. They very likely presented a posthemorrhagic reflex polyglobulism associated with contraction of the spleen. Hemoconcentration is an insufficient aid to diagnosis of shock and may even lead to an erroneous diagnosis because of the fact that wound shock differs definitely from histamine shock. Systematic studies of hemoconcentration in shock may be omitted, while pulse and arterial tension determinations are decisive in estimating the required amount of fluids. The choice between plasma and blood is to be based on the nature of the wound, on the importance of the hemorrhage and on the actual availability of blood and plasma.

Helvetia Medica Acta, Basel

12:1-140 (May) 1945

*Traumatic Thrombosis of Splenic Vein: Clinical and Pathologic Aspects. K. Teil.—p. 3.
Spontaneous and Experimental Glomerulonephrosis. H. U. Zollinger.—p. 23.
Chronic and Acute Myelosis. B. Jasiński and O. Roth.—p. 59.
Fatigue and Exhaustion of Individual Muscle. O. Riesser.—p. 119.
Relation Between Cell Structure and Carbohydrate Metabolism. O. Riesser.—p. 131.

Traumatic Thrombosis of Splenic Vein.—Geiser and Studer say that although the symptomatology of thrombosis of the splenic vein shows considerable uniformity, there are numerous etiologic factors, among which trauma is infrequent. In the case under consideration a fall from a ladder on the left side was the traumatic cause. Diagnosis proved difficult because of the absence of esophageal varices. The epinephrine reaction, the leukothrombopenia, the history of the trauma and the formation of a collateral circulation in the left side of the abdomen facilitated a correct diagnosis. Differentiation from thrombosis of the portal vein was not definite. Since clinical symptoms had persisted from the time of the trauma to the roentgenologic demonstration of the splenic tumor, twenty-two days later, the trauma seemed established as the causal factor, although trauma is a rare cause of thrombosis of the splenic vein. Splenectomy is advisable in case of hemorrhages from esophageal varices or if the size of the splenic tumor causes complaints. However, if extensive varices develop in the splenic region of the abdominal wall, ligation of the splenic artery is to be preferred to splenectomy; this is the case also in the presence of extensive adhesions of the spleen.

Revista Paulista de Medicina, São Paulo

30:75-126 (Feb.) 1947. Partial Index

*Myoma of Uterus and Arterial Blood Pressure. A. Wolff Neto, J. Hamermesz and N. A. Salum.—p. 75.

Uterine Myoma and Hypertension.—Observations on a group of white and a group of Negro women between the ages of 20 and 60 with myoma of the uterus (198 patients) and without uterine myoma (120 patients) revealed that hypertension and myomas of larger size were more frequent in Negro women than in white women. The incidence of hypertension in white women was the same for those with and without myoma, whereas in Negro women it was greater for those with myoma. Regardless of race, hypertension was more frequent and more intensified in women having myomas of large size than in those having myomas of medium or small size. Larger myomas were encountered in Negro women.

Acta Medica Orientalia, Jerusalem

6:67-116 (March) 1947

Laboratory Aspect of Fungus Diseases of the Skin and Hair. F. Sagher.—p. 68.
Psoriasis: Study on Problem of Occurrence of Psoriasis in Hot Climate. J. Tas.—p. 79.
Problems of Moniliasis. F. Raubitschek.—p. 85.
Recurrent Verrucous Leishmaniasis of Skin (Oriental Sore). L. Steinhauer.—p. 91.
Specific Treatment (Antisyphilitic) in Cases of Habitual Abortion, Missed Abortion, Partus Prematurus and Stillbirth. A. Sadovsky and S. Kaplan.—p. 95.
*New Quick Method for Staining Treponema Pallidum. H. A. Cohen.—p. 99.
*Ectodermosis Erosiva Pluriorificialis Due to Phenobarbital: Report of 3 Cases. C. Berlin.—p. 101.
Excessive Reactibility to Sandfly Bites. S. Gill.—p. 104.
Pemphigus and Allied Conditions: A Review. M. Michael.—p. 106.

Quick Staining Method for Treponema Pallidum.—Since available Treponema pallidum stains are not suitable for the practitioner's office, Cohen describes the requirements of such a technic and outlines one which has advantages owing to the greater ease and rapidity with which it is performed and the greater reliability of results. The serum must be spread in a thin film, and fixation is done by covering the slide with a 36 to 40 per cent solution of formaldehyde with subsequent heating until evaporation is noted. The slide is then flushed with distilled water. For staining Cohen employs 4 drops of a solution consisting of equal parts of normal sodium hydroxide and tenth normal sodium hydroxide, 2 drops of a 5 per cent solution of iron chloride, 4 drops of normal hydroxylamine hydrochloride and 3 drops of a 10 per cent solution of pyrogallic acid. The slide is then heated until bubbles appear under gentle stirring. This is followed by flushing with distilled water, after which a few drops of an ammoniacal solution of silver nitrate in 0: 5-5 per cent solution are added. After a few seconds staining is complete. The slide is then washed with distilled water and air dried. Under the microscope the treponemes display a reddish brown color on a light background in artificial light. It is important that none of the solutions required need be freshly prepared. The entire process takes only one minute.

Ectodermosis Erosiva Pluriorificialis Due to Phenobarbital.—According to Berlin phenobarbital produces exanthems which are mostly morbilliform or scarlatiniform in about 3 to 4 per cent of patients. Another type of reaction is the severe variant of erythema multiforme accompanied with fever and involvement of the mucous membranes and generally known as ectodermosis erosiva pluriorificialis (Rendy-Fliesinger). In 1 of the 3 cases of ectodermosis erosiva pluriorificialis a patch test with a 20 per cent solution of the drug elicited a slightly positive reaction. In 2 cases the intracutaneous test with a solution of 2 per cent was strongly positive. The diminishing of the reaction after repeated and increased oral test doses in 1 case speaks for the possibility of a specific desensitization.

Acta Medica Scandinavica, Stockholm

127:1-192 (March 22) 1947. Partial Index

- *Familial Leukemia: Preliminary Report. A. Videback.—p. 26.
- *Case of Calcinosis Universalis. H. Lebel and A. Randløv-Madsen.—p. 53.
- Spontaneous Hypoglycemia, with Special Reference to Diagnosis of Hyperinsulinism. R. Luft.—p. 65.
- *Symptomatology and Prognosis of Lipoid Nephrosis. H. Laake.—p. 91.
- Hemopericardium—Angiosarcoma Cordis: Case of Primary Heart Tumor Diagnosed Intra Vitam. H. F. Lange and T. Christiansen.—p. 107.
- *Curative Effect of Pure Duodenal Secretion from Swine in Cases of Pernicious Anemia. E. Landboe-Christensen and C. L. S. Bohn.—p. 116.
- Keratoconjunctivitis Sicca in Cases of Rheumatoid Arthritis. T. Stenstam.—p. 131.
- Studies of Infectious Mononucleosis. E. Klemola.—p. 149.

Familial Leukemia.—According to Videback observations of familial leukemia have grown so numerous that one cannot rule out factors of heredity as contributory causes of the disease. This theory receives support from the observation of leukemia in identical twins and the occurrence of leukemia in successive generations and in 3 or 4 members of the same family. The author was able to detect 11 instances of familial leukemia. The familial occurrence of leukemia was 7.6 per cent of all the cases, that is, it was as frequent as that of pernicious anemia. As regards the relative frequency of the different forms of leukemia, the familial cases show the same distribution as a nonselected material, and on an average familial leukemia manifests itself at an earlier age than leukemia in general. These circumstances indicate that familial leukemia is, at least partly, of hereditary origin, and that its occurrence depends on a common leukemic gene. The manner in which this gene is inherited is as yet unelucidated, but irregular dominance is most likely.

Calcinosis Universalis.—The patient with calcinosis universalis presented by Lebel and Randløv-Madsen was a girl aged 9. The disorder had lasted about four years. Severe contractures and huge lime salt deposits had developed around the large joints. An attempt was made to influence the lime salt deposits by means of an alkalizing treatment consisting in giving large quantities of sodium citrate by mouth. The treatment had no effect. The rarity of calcinosis universalis is indicated by the fact that only about 80 cases have been reported since 1877. It is most frequently observed in childhood and early adolescence.

Symptomatology and Prognosis of Lipoid Nephrosis.—In order to get an idea of the prognosis of lipoid nephrosis, Laake made follow-up studies on patients who had presented the picture of lipoid nephrosis while under hospital observation. At the time of hospitalization all of them had manifest edemas, and 7 were found to have hydrothorax and/or ascites. There also were found hypoproteinemia, inversion of the albumin/globulin ratio, hypercholesterolemia, hypocalcemia and normal xanthoprotein values. Thirteen of the 16 patients were investigated. Two of these had become free from symptoms after an illness lasting four months and one and one-half years. The length of the observation time for these patients was five and fifteen years, respectively. Both of them were 11 years old when the disease first appeared. Six of the patients reexamined still presented symptoms of the renal disease, 4 had died of chronic glomerulonephritis with uremia and 1 had died of cardiac infarction. Microscopic examination of the kidneys also revealed changes typical of chronic glomerulonephritis. The author concludes that adults who present the clinical picture of lipoid nephrosis really have a chronic glomerulonephritis, which in many cases has a more protracted and benign course than what is usually seen.

Curative Effect of Duodenal Juice of Swine in Pernicious Anemia.—Landboe-Christensen and Bohn were able to collect from a hog with a pouch and fistula arrangement large quantities of pure duodenal juice. They tested the possible efficiency of this secretion in pernicious anemia. Treatment with the duodenal juice was first tried on a man aged 83, with negative results. The authors obtained a curative effect in a previously untreated case of pernicious anemia; the patient was given ten daily doses of 150 cc. of pure duodenal juice. The bone marrow reacted in the typical way. Discrepancies between this observation and the experiments of Castle, Townsend and Heath may find an explanation in the fact that the duodenal secretions in man and in swine may differ regarding their anti-pernicious anemia effect, but a relationship between pernicious anemia in man and the duodenoprival anemia in swine seems to have been established.

Nordisk Medicin, Gothenburg

33:603-674 (March 7) 1947. Partial Index

- Contrast Mediums for Cholecystography: Review of Literature. H. Heiwinkel.—p. 603.

Hospitalstidende

- Steatorrhea Arthropericarditica: Report of Case Together with Review. J. Clemmesen.—p. 607.

Norsk Magasin for Lægevidenskapen

- Fifteen Years' Abortion Material, with Special Regard to Treatment. O. W. Tenfjord.—p. 615.
- *Acute Anterior Poliomyelitis in Pregnancy. R. Grelland.—p. 620.

Hygiea

- Nature of Stimulant of Sympathetic. U. S. v. Euler.—p. 629.
- Effect of Pyridoxine Hydrochloride (Vitamin B_6) in Paralysis Agitans and Postencephalitic Parkinsonism. Endla Hiielo.—p. 632.

Svenska Läkaresällskapets Förhandlingar

- *Animal Experiments and Pathanatomic Observations in Man on Function of Parathyroids. Å. Wilton.—p. 658.
- Physiology and Pathology of Parathyroids. N. Törnblom.—p. 661.

Acute Anterior Poliomyelitis in Pregnancy.—Grelland describes the course of acute anterior poliomyelitis in pregnancy observed in Ullevål Hospital in 10 patients aged from 20 to 41. Of the 6 patients given respirator treatment the 4 in the last three months of pregnancy died. Four healthy children were born, in 1 instance by cesarean section. There was 1 abortion, and in 1 case the pregnancy is not yet terminated but the prognosis is favorable. Microscopic examination of mother and child in 2 instances showed extensive lesions in the spinal cord and medulla oblongata in the mothers, while the nervous system appeared to be normal in the fetuses. Of 58 cases of poliomyelitis in pregnancy reported in Scandinavian literature, including the 10 here reported, 29, with 1 death, occurred in the first six months of pregnancy and 29, with 14 deaths, in the last three months of pregnancy. The deaths were due to respiratory paralysis. In 4 cases the result of the pregnancy is not known. In 3 cases delivery was by cesarean section, in 32 it was spontaneous; 30 healthy children were born. Grave paralysis of the lower extremities and abdominal musculature does not affect the course of delivery. Respiratory paralysis in the last three months of pregnancy is considered an indication for immediate cesarean section.

Animal Experiments and Histologic Observations on Function of Parathyroids in Man.—Wilton concludes that hypercalcemia in hyperparathyroidism occurs because the hormone excess in some way leads to dedifferentiation of mature bone cells with consequent dissolution of precipitated calcium salts. Hyperparathyroidism in osteitis fibrosa generalisata seems in most cases to depend on an intermittent irritation of the parathyroid parenchyma. This irritation may possibly originate from the hypophysis.

Book Notices

Recent Progress in Hormone Research: Proceedings of the Laurentian Hormone Conference. Volume I. Edited by Gregory Pincus. Cloth. Price, $7.50. Pp. 399, with illustrations. Academic Press Inc., 125 E. 23d St., New York 10, 1947.

The Laurentian Hormone Conference, the successor to the Gibson Island Hormone Conference, has established a reputation for scientific excellence although only three annual meetings have been held. Sharply restricted in its membership, the proceedings of this conference have not been available to those not fortunate enough to be invited to participate, except through widely scattered publications in which part of the material given at one of the conferences is presented.

Under the able editorship of Dr. Pincus, the entire proceedings, including discussions, of the 1946 conference have been gathered together. The papers, although dealing with highly specialized topics in hormone chemistry and physiology, should, by the excellence of presentation and their authoritative authorship, find wide acceptance among all scientists interested in endocrinology.

The proceedings are divided into four parts, the first dealing with neurohumoral relationships. In this section David Nachmansohn summarizes the knowledge of the role of acetylcholine in the mechanism of nerve activity, and Frank A. Beach gives a fascinating discussion of the role of hormones in the mating behavior in vertebrates. The second section, dealing with the chemistry and physiology of adrenal hormones, is the most technical in the book, and those who can read it profitably are undoubtedly limited in number. Papers by E. C. Kendall, T. F. Gallagher, C. N. H. Long and Gregory Pincus discuss various aspects of the synthesis and actions of the adrenal cortical steroids.

The role of hormones in metabolic processes is ably discussed by Leo T. Samuels, C. D. Kochakian and W. U. Gardner in the third section. Of interest to clinicians are the excellent discussions of various aspects of clinical endocrinology in the fourth part of the book. Ira T. Nathanson presents a masterly discussion of the role of endocrines in human cancer; Fuller Albright brings up to date our knowledge of the effect of hormones on osteogenesis; Nathan B. Talbot and Edna H. Sobel discuss growth in children and the endocrine factors influencing this process; and Arthur Grollman gives a well balanced picture of our knowledge of the endocrine aspects of experimental renal hypertension.

This book, although of greatest interest to the experimental endocrinologist, can be read with profit by biochemists, physiologists and clinicians who seek authoritative information concerning the newer knowledge of hormones.

A Handbook of Commonly Used Drugs, Including Certain Measures for the Control of Diseases Peculiar to the Tropics of the Western Hemisphere. By Michel Pijoan, B.A., M.D., Director, The Chemical Foundation Laboratory, University of Colorado, Boulder, Colorado, and Clark Harvey Yeager, M.D., Dr.P.H., Chief of the Medical Section, Health and Sanitation Division, Office of Inter-American Affairs, Washington, D. C. Cloth. Price, $3.75. Pp. 198. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

This book cannot be recommended for students or physicians. There are now available so many books on drugs that there would seem to be little excuse for new ones unless they provide a real contribution. The authors have attempted to provide a small book apparently for occasions "when reference material for drug research is difficult to obtain"; they state that it "is not designed to replace the standard texts in Pharmacology but rather to act as an adjunct and a guide in conditions where such texts are relatively unavailable." Unfortunately, what is offered cannot be considered adequate even as an adjunct and certainly not as a guide. Such important subjects as diuretics are dismissed in two and one-half pages, female sex hormones in one and one-half pages, cathartics with one page and emetics and expectorants with one page. The book is already dated, as there is no mention of newer substances such as "tridione," thiouracil and propylthiouracil, and "promin" for leprosy; the discussion on folic acid is limited to eleven words in a chapter on nutritional factors and omitted entirely from the chapter on hematologic agents. Only diethylstilbestrol seems to be mentioned as a synthetic estrogenic substance and then under the name "stilbestrol," a name which has been discontinued for some time. Furthermore, there are statements which are contrary to the consensus of those informed in the respective fields. For example, strychnine is offered as a stimulant for barbital poisoning, "dilaudid" is claimed to be better than the other opium derivatives, "anthallan" is given a favorable recommendation for pruritus, allergic dermatoses and infantile eczema, and "atabrine" is "now the drug of choice in treating malaria." The authors claim that "the synthetic product desoxycorticosterone has placed the use of cortical extracts in second place. The synthetic product is more effective, more potent, and can be assayed quantitatively." And for agranulocytosis, "pentnucleotide" "may cause a remarkable improvement within forty-eight hours." This is an unusual statement in view of the fact that pentnucleotide has been supplanted as an effective agent for agranulocytosis and the informed workers are now agreed that penicillin is the most effective substance.

Considering the small amount of space that is devoted to drugs, one wonders why pages in this volume are taken up with discussions of tropical diseases that include manifestations, transmission, treatment and prevention, a classification of anemias, as well as a discussion of the blood bank and details of how to test for blood groups. A description of a drug is supposed to reveal what it is, how it works, what it is good for, the dosage and any specific properties that may be of value to the physician, such as incompatibilities and synergism. When these are presented in proper sequence, with sufficient explanation and offered with true statements, the reader will have a worth while book as a guide, provided of course the manuscript is proofread carefully. This book even lacks careful proofreading; obvious mistakes appear on pages 5, 15 and 48.

Better Hospital Care for the Ambulant Patient. Report of the Special Committee on Hospital Clinic Services. Paper. Pp. 184, with 2 illustrations. The Hospital Association of Pennsylvania, 222 N. Third St., Harrisburg, Pennsylvania, 1946.

A survey of outpatient services rendered by voluntary hospitals was conducted by the Special Committee on Hospital Clinic Services of the Hospital Association of Pennsylvania. While the survey was confined to Pennsylvania, the recommendations apply to voluntary hospitals generally. As a study of services and facilities, it is somewhat less detailed than seems necessary. Outpatient clinics and group practice clinics in connection with hospital services are considered in detail. The function of the voluntary hospital in restoring the usefulness of handicapped persons is carefully presented. The health center idea and the problem of dental care are related briefly in terms of hospital services. One is impressed by the committee's evaluation of the voluntary hospital as the center for all voluntary health services. According to the committee "the hospital of the future must not be a single, independent institution, but part of a system of health service, coordinated functionally and administratively with other agencies to provide complete health care to every part of the community." This to the committee does not mean merely provision of hospital facilities and diagnostic facilities. "From its study and investigation of the two types of clinics (diagnostic clinic and diagnostic treatment clinic) the committee is unanimous in the belief that the diagnostic clinic which does not afford treatment, while performing a valuable service for certain types of cases, is not the type of clinic which it can recommend to the serious consideration of most of the member hospitals of the association. The primary reason is that diagnostic clinics by themselves are not popular with the public and are not self supporting.

While the committee does not suggest that hospitals take over the practice of medicine, it goes to some length to show the trend toward group practice. It states that "the establishment of independent group clinics, rather than the establishment of group clinics in close collaboration with the voluntary hospitals, is not in the public interest."

In discussing the group clinics the committee recommends that "under no circumstances . . . should the hospital seek to make a profit out of the clinic." However, it adds that most of the successful group clinics "have provided funds out of the clinic's surplus earnings for the construction of enlarged quarters for the clinic; for the purchase of new diagnostic equipment; for the enlargement and reequipping of the x-ray department and laboratories of the hospital as required, and in many cases for the expansion of the bed capacity of the hospital to take care of the growing business of the clinic."

The committee lists a number of "musts" for hospitals if they are to keep up with the trend of the times. In view of these comments and to help in understanding the hospital group's view of their own future, the following excerpt is interesting: "The necessary step is to teach them (the people) to go to clinics as soon as their bodies warn them that something is wrong, so that they may be cured while they are on their feet, without loss of time at work."

Uterotubal Insufflation: A Clinical Diagnostic Method of Determining the Tubal Factor in Sterility Including Therapeutic Aspects and Comparative Notes on Hysterosalpingography. By I. C. Rubin, M.D., F.A.C.S., Clinical Professor of Gynecology, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, $10. Pp. 453, with 159 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

This book was written with a twofold purpose. The first was to present uterotubal insufflation in its completed form as a clinical, nonsurgical method of testing for tubal patency and as a therapeutic agent. The second purpose was to evaluate by means of this test the etiologic importance of obstructed uterine tubes in sterile matings. The data presented are based chiefly on the author's extensive experience with uterotubal insufflation, which began in 1919, although his studies on the use of radiopaque substances started in 1914. The book is divided into five parts, comprising (1) anatomy, pathology and physiology of the fallopian tube, (2) technic of tubal insufflation, diagnosis, (3) therapy, (4) comparison of kymographic tubal insufflation and intrauterine injection of lipiodol and other iodized oils and (5) appendix.

Supplementing the author's personal experience are data derived from replies to a questionnaire sent by Rubin on the results of 80,376 tubal insufflations. The safety of this test is proved by the fact that there were only 190 cases of pelvic infection following the 80,376 tests. Rubin says this is "an incidence of 0.0024 per cent," but this is an error. The incidence is 0.203 per cent. Only two deaths from infection were reported from the total number of insufflations performed by 371 colleagues.

This book contains an enormous amount of useful knowledge not only about every aspect of the insufflation test and the use of iodized oil for determining the patency of the fallopian tubes but also about many factors in sterility other than that which concerns the tubes. An extensive literature is reviewed, as evidenced by a list of references which occupies twenty-four pages. Rubin himself contributed forty-five papers on the subject. The illustrations and graphs are beautiful and instructive, and all are well reproduced. The book is easy to read because it is written in a delightful and modest way.

Rubin's incidence of pregnancy in his 3,200 personal cases was over 18 per cent and the reviewer's incidence was more than 17 per cent. However, even if we conservatively estimate the frequency of pregnancy after the Rubin test as only 15 per cent, at least 12,000 women became pregnant after the 80,376 Rubin tests collected by the author. The majority of these women gave birth to healthy babies. If to this number are added the many thousands of unreported successes not only in this country but also all over the world, it will be realized that Rubin's contribution represents one of the great advances in the history of medicine in the last half century.

Quantitative Clinical Chemistry Interpretations. Volume I. By John P. Peters, M.D., M.A., Professor of Internal Medicine, Yale University School of Medicine, New Haven, Connecticut, and Donald D. Van Slyke, Ph.D., Sc.D. Second edition. Cloth. Price, $7. Pp. 1,041, with 62 illustrations. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1946.

Only one of a projected three volumes of the long awaited second edition of this fine reference work is as yet available. While the first edition was composed of two volumes, it was found necessary in the present edition to present the Interpretations in two volumes, and the Methods in the third.

This first volume, on interpretations, is now available, covering thoroughly the four topics energy metabolism, carbohydrate metabolism, lipid metabolism and protein metabolism. The second part, concerning carbohydrates, contains chapters on chemistry, physiology and the clinical aspects; the third portion contains chapters on lipids, steroid hormones and fat soluble vitamins; and that on protein contains the net metabolism of protein, amino acids, urea, ammonia, creatine and creatinine, and purines and pyrimidines.

Each topic is covered in a manner that allows the available evidence to be presented clearly and then interpreted, evaluated and criticized in a thoroughly scientific manner. By such means the little that is yet known with certainty about the complete course and continuity of any given phase of metabolism and the great amount left to conjecture is emphasized.

The preface states that "the bibliographies are indecently long," but it is in part because of, rather than in spite of, its completeness that this work is so valuable. The information obtained from important articles which were published as late as 1945 have been incorporated in the text.

The book contains good paper and is well bound. The illustrations are neat and clear; the subject index is well organized and appears to be quite complete.

Eksperimentalnaya endokrinologiya: Shchitovidnaya zheleza, parashchitovidnye zhelezy, podzheludochnaya zheleza, nadpochechniki, polovye zhelezy, gipofiz. [By] N. B. Medvedeva. [Experimental Endocrinology: Thyroid Gland, Parathyroid Glands, Pancreas, Adrenals, Gonads, Pituitary Body.] Cloth. Pp. 743. Izdatelstvo Akademii Nauk Ukrainskoy SSR, Kiev, 1946.

This volume, in Russian, is devoted to the consideration of the thyroid, the parathyroids, the pancreas, the adrenals, the reproductive organs and the hypophysis. The present status of our knowledge of the internal secretions of the various endocrine glands is presented in an exhaustive and critical manner. At the same time, problems requiring further investigations are pointed out. The author, herself a prolific worker in the field of endocrinology, presents her own contributions on the cellular functions of the parathyroids and the hypophysis and on the important function of the adrenal cortex in what she terms the reparative phase of carbohydrate metabolism. The isolation by the author of a "hormone of rest" in the secretion of the adrenal cortex opens up possibilities of treatment of certain asthenic states. The volume is a worth while contribution to the literature on internal secretions.

Jubilee Volume Dedicated to Emil Christoph Barell, Philosophiae Doctor, Medicinae Doctor Honoris Causa, Rerum Politicarum Doctor Honoris Causa, President of F. Hoffmann-La Roche & Co. Limited Company, on the Occasion of the Fiftieth Anniversary of His Association with the House of Roche, by the Scientific Workers of the Roche Companies. Cloth. Pp. 468, with illustrations. Hoffmann-La Roche, Inc., Nutley, N. J.; Basel, 1946.

This volume is dedicated to Emil Christoph Barell, president of F. Hoffmann-La Roche & Co., Ltd., on the occasion of the fiftieth anniversary of his association with the house of Roche. It has been compiled by the scientific workers of the Roche companies. Some of the articles are written in German, others in English. They are all concerned primarily with fundamental studies on such subjects as vitamins, antiseptics and analgesics, which are of more interest to the research worker than to the clinician. The laboratory man will probably find considerable interest in the volume because of the nature of the topics and because of his training to evaluate critically this type of material.

The Ethicon Book of Sutures for Operating Room Nurses and Others Interested in the History, Use, and Manufacture of Suture Materials. Compiled by Miriam Zeller Gross, A.B., M.A. Fabrikoid. Price, 50 cents. Pp. 200, with illustrations. Ethicon Suture Laboratories, Division of Johnson & Johnson, New Brunswick, N. J., 1946.

This book is designed for the promotion of surgical gut sutures. It is published by the Ethicon Suture Laboratories, a division of Johnson and Johnson. The most interesting and instructive part of the book occupies about a third of the text. The rest of the material is largely miscellaneous, anecdotal and historical.

Vladimir Petrovich Filtov, laureat Stalinskoy premii: Deystvitelniy chlen Akademii Nauk Ukrainskoy SSR i Akademii Meditsinskikh Nauk SSSR (Kratkiy ocherk zhizni i tvorchestva). [By] S. F. Kalfa i V. E. Shevalev. [Vladimir Petrovich Filatov: Short Sketch of His Life and Work.] Paper. Price, 3 rubles. Pp. 48, with 11 illustrations. Izdatelstvo Akademii Nauk Ukrainskoy SSR, Kiev, 1946.

This is a brief brochure on Filatov and a brief report on some of his clinical contributions.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

RHEUMATOID ARTHRITIS AND VITAMIN DEFICIENCY

To the Editor:—Can vitamin deficiency of itself cause rheumatoid arthritis or is it "only an influencing factor of the disease?" What is the present medical consensus? I ask the question because of my experience with the following case: A housewife, first seen by me on Feb. 1, 1945, had been suffering with arthritis of the hands and feet for twenty-two years, the attacks occurring at intervals of one to three months. There was no fever but much suffering from pain, sleeplessness and impaired function. Her tonsils and teeth had been removed thirteen years previously. She had been treated with diathermy and ultraviolet light without relief. Gold injections had been tried, but she was unable to tolerate them. My examination showed a typical uniform symmetrical picture of arthritis deformans of all the fingers, wrists and toes, carpal and metacarpal, tarsal and metatarsal joints with atrophy of the soft tissues, lateral subluxations and loss of function. Aside from this far advanced and incurable destruction in the extremities, the patient's general condition was fairly satisfactory. Her weight was 130 pounds (59 Kg.), height 61 inches (155 cm.), pulse 80, blood pressure 120/80. Since she had glossitis I prescribed nicotinic acid and riboflavin tablets. Within a week the arthritic attack from which she was suffering at the time of her visit ended. Two months after the beginning of the treatment she stated that she was feeling considerably better generally and had gained 5 pounds (2.3 Kg.). Without further consultation she discontinued the vitamin dosage. Towards the end of April she suffered a new arthritic attack. On May 10 I prescribed large doses of the entire B complex. Since that time, for approximately eighteen months, there have been no new attacks. Her general condition is much improved; her weight has risen to 157 pounds (71 Kg.); her sedimentation rate has dropped from 27 to 17 mm. per hour. There has been slight but noticeable recovery of function of the affected members.

Bendet Nelson, M.D., New York.

Answer.—It has never been shown experimentally or clinically that any vitamin deficiency caused rheumatoid arthritis. Large amounts of the various vitamins have been given to many patients with this disease without significant effect on the joints (Freyberg, R. H.: Treatment of Arthritis with Vitamin and Endocrine Preparations, The Journal, Aug. 8, 1942, p. 1165. Traeger, C. H.: *M. Clin. North America.* **30**:616 [May] 1946).

Minor degrees of vitamin deficiency are not uncommonly found in rheumatoid patients as they are found also in patients chronically ill from a variety of diseases. Such minor symptoms of vitamin B deficiency as mild dermatitis over elbows or knees, sore mouth and red, sore tongue may be found in arthritic patients who have anorexia, chronic indigestion or malnutrition or who have too assiduously adhered to a low calory "rheumatism diet." These lesions respond well to the administration of vitamin B complex or its components, but the articular lesions of rheumatoid arthritis have not responded significantly to the use of vitamin B or of any other vitamin preparation.

There is also no direct indication for the use of vitamins A, C, E or K in the treatment of rheumatoid arthritis. Concentrated doses of vitamin D sometimes provide a temporary sense of well being but are not curative and may be dangerous. Cases of vitamin D intoxication, some fatal, are being reported increasingly as occurring in patients with rheumatoid arthritis.

CONCEPTION AND MENSTRUATION

To the Editor:—Is it possible for coitus during menstruation to result in pregnancy and, if so, what is the mechanism of nidation? Is there any well founded objection to this practice?

M.D., New York.

Answer.—Theoretically and from studies in monkeys, conception is impossible during menstruation. The reason for this is that in both monkeys and women who have a fairly regular menstrual cycle varying from twenty-six to thirty days, ovulation occurs in the midinterval between the bleeding episodes. Ovulation usually takes place about fourteen days before the next expected menses. A female egg does not live more than a few hours, and spermatozoa probably are not capable of fertilization for more than twenty-four hours; hence for pregnancy to occur the ovum and egg must meet within a maximum period of forty-eight hours. However, R. L. Dickinson (*Am. J. Obst. & Gynec.* **14**:718 [Dec.] 1927) studied the "safe period" as a birth control measure from seven different angles: (1) records of pregnancies resulting from isolated intercourse, (2) ovulation as studied at laparotomies or on removal of ovaries, (3) effect on the subsequent period of castrating irradiation given at different days of the interval, (4) studies of the age of very young embryos, (5) types of tubal contraction and alterations in epithelial layers as found in women and shown to occur in animals at egg passing time, (6) hormones in the blood at different times and (7) vaginal smears. Dickinson claimed that there was general agreement on five matters: (1) Conception can occur at any part of the month, (2) there is a definite difference between favorable and unfavorable periods, (3) the week or ten days following menstruation is the time of greatest likelihood of conception, (4) the week preceding menstruation presents the least chance of conception, averaging about 7 per cent, or in various lists 3, 6, 9, 9.3 and 10 per cent, and (5) conception during menstruation is relatively frequent, about 13 per cent. Dickinson says further that, in view of the common avoidance of intercourse during menstruation, the percentage quoted by him may indicate a lower capacity for conception than actually exists.

It is difficult to reconcile Dickinson's statements with known physiologic facts. In at least some cases in which reliance was placed on a single coitus, either the patient's memory was fallacious or she had good reason to tell an untruth. Likewise it may be possible that ova survive longer in women than in animals and also spermatozoa may be capable of fertilization for a longer time.

Except for esthetic reasons there is no objection to having intercourse during menstruation if the flow is normal in amount. However, in women who bleed profusely the practice would be pernicious.

STERILIZATION OF MORGUE IN TUBERCULOSIS SANATORIUM

To the Editor:—Will you kindly advise what is considered the best procedure for sterilizing the autopsy table and morgue floor in a tuberculosis sanatorium?

Raymond H. Goodale, M.D., Worcester, Mass.

Answer.—The problem essentially involves the killing of tubercle bacilli on the autopsy table, instruments and floors of the autopsy room. It must also be remembered that the bacilli are sometimes protected by varying amounts of mucus and purulent exudate.

There are various possibilities, among which may be mentioned the sterilization with live steam, sterilization with ultraviolet light and the free use of saponated solution of cresol (lysol) or similar disinfectant. All these methods have objectionable features. The live steam may not reach every bacillus in crevices. The ultraviolet light also cannot "go around corners." In addition there is much danger of eye damage if lead goggles are not used. The lysol method is effective but greatly overdone; there can scarcely be any necessity to cover the floors with a 1 inch layer of lysol solution.

Until something better is proved by experiment the use of a form of contagious technic with a good disinfectant is indicated. The method of procedure must be more rigid than that usually employed in the autopsy room. It should approach more the technic used in the most contagious of diseases. The operators should be well gowned, should wear gloves and should wear special shoes or rubbers that can be sterilized. There should be great care not to drop any liquid material on the floors, and if any drops of blood or pus accidentally fall to the floor they should be wiped up immediately with a sponge saturated with disinfectant. The aim should be to confine all the septic material to the autopsy table, metal tables and scales, all of which can be readily cleaned with water and disinfectant. When the autopsy is completed, a properly instructed assistant or diener should wash off all the tables and instruments with water, making sure that all the washings go down the drain. Then the tools are to be put in a disinfecting solution and the tables and scales are to be gone over with sponges soaked in disinfectant. The floors are then mopped with disinfectant, care being taken not only that the floor is cleaned but that the disinfectant penetrates all cracks and crevices. When the disinfectant dries it gradually becomes concentrated, and every object is ultimately covered with concentrated solution.

The disinfectant used is of much importance. Certain ones (as mercury bichloride) are precipitated on any albuminous material and are thereby rendered ineffective. The coal tar products and related substances (phenols, cresols) have better penetrating power and are more effective. The ordinary "lysol" is good because of the added clearing properties of the soap. Certain quaternary ammonium compounds seem to offer some promise, but they must be used in rather high concentrations; an added feature is the freedom from the objectionable odor inherent in the coal tar products. Most other tuberculocidal substances are too costly. The fact is that an ideal disinfectant has not yet been found that will be effective, free from odor and inexpensive.

FEEDING OF PREMATURE INFANTS

To the Editor:—Is it the modern practice to have a mother make an effort to nurse her premature 8 month old baby, weighing 5 pounds at birth, and if the mother cannot supply sufficient milk then to supplement it with modified cow's milk? The mother is anxious to nurse her baby. Would the following be a good formula for the baby to start out on: "Straight unpasteurized cow's milk—first remove all the cream, then add sugar (but no water) and boil for about one-half hour at 150 degrees." Feed the baby 1½ to 2 ounces every two hours and three to four hour intervals at night? Is the modern conception to reduce the protein content by adding varying amounts of water and sugar to bring it up to mother's milk and to add cream slowly to bring the fat content up to that of the mother's milk? Isn't it safer and more desirable and convenient to use condensed unsweetened milk to make up the formula?

M.D., Tennessee.

ANSWER.—Breast milk is the best feeding for any premature baby. A premature infant weighing 5 pounds should be vigorous enough to nurse entirely at the breast if the mother has a sufficient milk supply. If the mother's milk is insufficient it would then be necessary to complement the breast feedings with modified cow's milk formula. This can be done either by diluting whole cow's milk with water and adding a carbohydrate such as dextrose, lactose or cane sugar up to approximately 5 per cent of the total volume, or using an already prepared commercial cow's milk feeding, either powdered or liquid, with proper dilution. The suggested feeding in the question "Straight unpasteurized cow's milk—first remove all the cream, then add sugar (but no water) and boil for about one half hour at 150 degrees" would be low in fat, and the infant would probably be hungry on such a mixture because of the low caloric value of skimmed milk. As to the intervals of feeding, such an infant could probably be fed at most every three hours, making eight feedings for twenty-four hours. On reaching 6 pounds the baby could probably be given six feedings at four hour intervals. The amount at each feeding would vary with individual infants.

A modern concept of infant feeding attempts to include a sufficient caloric value per ounce together with ample amounts of protein, fat, carbohydrates, mineral salts, water and vitamins, so that all the infant's nutritional needs for growth, development and maintenance are supplied for twenty-four hour feedings. Cow's milk contains 4 per cent protein, as against 1.5 per cent protein in breast milk; dilution with water reduces the protein content of cow's milk but also reduces the carbohydrate content, which at 4 per cent lactose is originally lower than the 7 per cent lactose of breast milk; adding up to 5 per cent carbohydrate brings the caloric value of cow's milk formula up to that of breast milk. There is no reason for skimming the cow's milk or adding extra cream.

The final query dealing with condensed unsweetened milk is not clear. Condensed milk is fresh milk which has been heated for a considerable period, and carbohydrate added for a preservative. Evaporated milk is fresh milk which has been heated so that approximately one-half the volume of water has been removed and no carbohydrate has been added. The term condensed unsweetened milk used in this question probably applies to the modern term evaporated milk, which can be used as a source of cow's milk for the infant's formula. When evaporated milk is used, more water must be added to bring the cow's milk back to its original content, and an additional amount of water used for dilution.

Finally, when cow's milk formula is used in addition to breast milk, the term "complemental feeding" is used for the cow's milk formula from the bottle given directly following a breast nursing. The term "supplemental feeding" is used when the breast feeding is entirely omitted and the infant is given only the bottle formula.

BURNING SENSATION OF TONGUE

To the Editor:—I have in the past two years seen 2 patients, a woman of 60 and a man of 52, whose chief complaint is a burning sensation of the tip of the tongue. There is nothing visible on inspection. Both patients are perfectly normal in other respects. Vitamin deficiency has been ruled out and yet vitamin therapy did not lead to any improvement in their symptoms. Gallbladder disease has also been ruled out.

A. M. Spindler, M.D., New York.

ANSWER.—A burning sensation may occur in the absence of obvious cause, and it may be difficult to find the etiology. Even inflammation may be present but not visible. One must consider the possibilities and then try therapeutic tests. The duration of the burning and the dental situation were not mentioned by the inquirer but may be important.

Inflammation and irritation are often causative. Rough or unclean teeth and dentures may produce irritation at the tip of the tongue. A low grade infection can occur without redness but with soreness and burning of mouth surfaces. Smoking, food or drink may irritate the tongue. Electrogalvanic currents from metal fillings are now considered as credible a cause as when first described.

The tongue mirrors the condition of the intestinal tract to some extent, but the atrophy (with hypoacidity) and catarrh and hypertrophy (with hyperacidity) are usually visible and are not regularly accompanied with burning.

Deficiencies may produce tongue changes, but they are usually visible. Subclinical lesions may come from the lack of several members of the vitamin B complex and are not always cleared by therapy. The absence of the intrinsic factor, as well as an iron deficiency, may produce a superficial glossitis and atrophy which clears on therapy.

A neurogenic cause is possible, especially in the age group mentioned. The location makes a nerve lesion improbable. Burning is the common symptom of the temporomandibular syndrome, a result of occlusion changes from tooth wear and gingival shrinkage. Headache and other symptoms of the syndrome should be present. A psychoneurotic condition, perhaps associated with the climacteric, may include burning of the tongue.

A red blood cell count and a determination of gastric acidity might give valuable information. Appropriate treatment could then be used, if indicated.

Other methods of therapy might include cleaning and smoothing of the teeth or denture, a decrease in smoking and the use of irritant food and drink, the use of an astringent mouth wash (containing zinc chloride) and a trial of penicillin troches. Since vitamin therapy has failed so far, only unusual methods would seem worth a trial. Sevringhaus has reported clearance of chronic mild stomatitis from the administration of large oral doses (50 mg.) of nicotinamide over a two to three week period.

WIDESPREAD BURNING SENSATION

To the Editor:—What would cause burning of the soles of the feet, the palms of the hands, the eyelids, face and rectum, in presence of normal blood and urinary findings, in a man aged 45? What therapy can be suggested?

Edmund R. Nightingale, M.D., Bronx, N.Y.

ANSWER.—It is difficult to make a diagnosis on the data supplied. Acroparesthesia and acrodynia are terms given to an ill defined syndrome of a burning sensation in the extremities, possibly due to vitamin deficiency. Conceivably a similar process might affect the face and rectum also. An allergic state might be considered. In many cases of generalized itching and burning there is a psychiatric background.

A high vitamin diet especially rich in pantothenic acid may be tried, if this has not already been done. Injections of liver extract, as for pernicious anemia, might be tried also. The use of benadryl is sometimes of value in itching and burning of allergic origin. A psychiatric investigation, or possibly the use of the Rorschach test, might be helpful in uncovering neurotic trends.

ASYMPTOMATIC NEUROSYPHILIS

To the Editor:—A professional man aged 42 has for the past thirteen years had a 2 plus blood Wassermann reaction. Reports of spinal fluid tests made in 1940 and 1943 are not obtainable. About ten days ago the patient had a spinal fluid test revealing the cell count 0, colloidal gold 001222100 and quantitative Kolmer 44310. He has been examined by another internist and myself and our findings as to his physical condition are negative. He has had a thorough neurologic examination, which also was negative. The other internist interested in the patient's welfare suggested that we give the patient 10,000,000 units of penicillin. Eighteen months ago I gave him 4,000,000 units of penicillin, thirty-six oxophenarsine hydrochloride and twenty-four thiobismol treatments, and the Wassermann reaction remained 2 plus. A spinal test was not made at that time. It is my suggestion that the patient, if given penicillin at this time, have insulin or malaria along with it. There is a doubt in my mind as to whether the patient should have any treatment at present.

R. M. Nicholson, M.D., Los Angeles.

ANSWER.—In view of the fact that previous treatment of the patient for syphilis has been adequate according to accepted standards and that the present physical findings are negative for evidence of the disease, the decision as to the future handling centers about the significance of the spinal fluid examination just obtained. If the results of the spinal fluid studies done in 1940 and 1943 are not obtainable, the first indication is to check the present study. Experience has shown that single spinal fluid examinations are much less reliable than single blood tests in that, particularly in "asymptomatic neurosyphilis," interlaboratory check is much more difficult. It would be unwarranted, therefore, to enter into additional prolonged courses of therapy including malaria on the basis of these observations alone. In interpreting the other spinal fluid findings given it would also be helpful to have total protein determinations performed on the fluid with subsequent tests.

Assuming that the positive spinal fluid reactions given are confirmed, their significance is the next consideration. Syphilis, if present, is of long standing in this case. Under the circumstances the likelihood is not great that the blood serologic tests will be reversed to negative by additional therapy. Time alone without treatment would be as likely to accomplish this. Provided the spinal fluid blood count was performed within an hour or two after the fluid was drawn, the fact that there were no cells seems to indicate little or no activity of the central nervous system infection. In just the same way as there can occur fixed positive bloods, so also can there occur fixed positive spinal fluid Wassermanns in the absence of an actively progressing disease. Under such circumstances additional therapy is not indicated but rather prolonged observation, as in all cases of treated seropositive late syphilis.

If further treatment is decided on, penicillin alone in a total dosage of about 10,000,000 Oxford units, as has been suggested, is probably as satisfactory as any mode of approach to the type of problem that is described. This could be given in the form of aqueous crystalline sodium penicillin 80,000 units every three hours day and night for a period of fifteen days (120 injections), a total of 9.6 million units. Penicillin alone has given results as far as can be told in the period of observation as satisfactory as other forms of therapy, including intraspinal and malaria, for all forms of neurosyphilis with the possible exception of symptomatic dementia paralytica. In a field the study of which is as recent as the penicillin therapy of neurosyphilis there is of course still much difference of opinion, and a perusal of these two articles is suggested as being most pertinent to the therapy of the type of case in question:

Stokes, J. H., and Steiger, H. P.: Penicillin Alone in Neurosyphilis, THE JOURNAL, May 4, 1946, p. 1. Moore, J. E., and Mohr, C. F.: Penicillin in the Treatment of Neurosyphilis: I. Asymptomatic Neurosyphilis, *Am. J. Syph., Gonor. & Ven. Dis.* **3:** 405 (Sept.) 1946.

The use of insulin for malaria, considering the risks involved, hardly seems justified in the absence of symptoms and with spinal fluid findings which do not indicate activity or progression. Suspected cases of neurosyphilis should be completely reevaluated every six months or a year over a period of several years until the exact status can be determined. In fact, the potential seriousness of this complication makes periodic checks for life desirable. Future handling other than suggested will depend on the results of the periodic study.

BARTHOLIN CYST

To the Editor:—A woman aged 37 had a painful cyst about the size of a walnut in the Bartholin region on the right side. On aspiration I found a purulent fluid. After aspiration I injected 100,000 units of penicillin in saline solution into the cyst. Although it is definitely not of gonorrheal origin from the clinical and laboratory point of view, I injected 100,000 units of penicillin in oil on two successive days into the buttocks. Now, two weeks after the aspiration and penicillin treatment, the cyst is flat and about one fifth of its original size and no longer painful at all. The patient has had chronic ulcerative colitis for the past twelve years with occasional acute exacerbations. For the past few months her colitis has been relatively quiescent. Would operative procedure be indicated for this cyst in view of the close proximity between the surgical and the colitis areas or would a more conservative means of treatment be preferable?

S. J. Weitzen, M.D., Bronx, N. Y.

ANSWER.—If the patient has no disturbing symptoms, the greatly reduced Bartholin gland cyst may be left alone. Perhaps during the next few weeks it will shrink still more, but even if it does not there is no need to remove it at present. If the cyst should return and certainly if evidence of infection appears, the cyst should be removed notwithstanding the history of colitis. A Bartholin cyst or abscess may be removed satisfactorily by means of an electric cautery as well as by surgical excision.

NEON LIGHTS

To the Editor:—Will a dermatitis result from a neon light such as used in advertising signs? What are the laws controlling neon lights in relation to the power of the light and the proximity of homes? Are there any harmful effects from such lights?

E. S. Coster, M.D., Solomons, Md.

ANSWER.—In the manufacture and repair of the neon type of signs certain chemicals may be employed that are potentially detrimental to workmen. Such risks do not extend to the public. Most cities and possibly states apply regulations as to signs, but these deal chiefly with dimensions, elevations and supports rather than with light intensities. Zoning ordinances often regulate signs including illuminated signs as an aspect of the noninvasion of residential districts by business. All states and many municipalities possess nuisance laws which may be applicable to illumination as a nuisance. However, neon signs are not nuisances per se and many are not nuisances in any legal sense. Some neon type signs do provide affront to the eyes, to sleep and to safety. Nowadays the eyes are confronted with possibly a hundred times as many varied stimuli as they were half a century ago. Eyes are endlessly beset in their continual efforts to accommodate to changing light stimuli. Complex on and off signs close to the viewer are the most disturbing. Some signs have a high frequency flicker probably related to the form of power. Eyestrain from multitudinous signs is inescapable. Confusion in detecting traffic light signals in the midst of scores of other colored signs jeopardizes safety.

PASTEUR TREATMENT FOR RABIES WHEN NOT BITTEN

To the Editor:—A girl aged 5½ years was exposed to rabies in June 1946. She received the usual fourteen dose Pasteur treatment. About the first day of February 1947 the girl's dog developed signs of rabies, and the diagnosis was pronounced by a veterinarian. Although the girl was not bitten by the dog should she be given another fourteen dose Pasteur treatment?

Karl H. Kortheuer, M.D., Calexico, Calif.

ANSWER.—If the girl was not bitten by the dog, as stated to be a fact in the question, then there is no reason whatever for giving her a new course of treatment now. It is assumed that no open places on her skin or lips came into close contact with the dog's saliva after it became rabid. The same answer would be made if the girl had not been "exposed to rabies" and given preventive treatment last summer. Undoubtedly there is still a degree of immunity as a result of that treatment. It is possible that treatment again at this time might cause undesirable reactions on account of the sensitization induced by the treatment last summer.

FOLLICULAR LYMPHOBLASTOMA

To the Editor:—Will you please discuss the prognosis and treatment of giant follicular lymphoblastoma (Brill-Behr-Symmer's disease).

Aaron Berger, M.D., Bronx, N. Y.

ANSWER.—The prognosis in follicular lymphoblastoma is better than in other types of lymphosarcoma. Baggenstoss and Heck (Follicular Blastoma, *Am. J. M. Sc.* **200:** 17 [July] 1940) collected data on the duration of the disease in 53 cases of follicular lymphoblastoma. The average duration of life in 24 patients who were living was 4.6 years, and in 29 patients who had died it was 4.8 years. Two patients were still living after seventeen years. Most cases of follicular lymphoblastoma respond well to x-ray treatment, at least temporarily. Either local or total body irradiation may be employed (Sugarbaker, E. D., and Craver, L. F.: Lymphosarcoma, THE JOURNAL, July 13, 1940, p. 112). Radioactive phosphorus or nitrogen mustard may produce a therapeutic effect, but x-ray therapy is to be preferred.

SYNTHESIS OF PENICILLIN

To the Editor:—With reference to the inference in the Dec. 21, 1946, issue of The Journal that du Vigneaud and his associates were the first to synthesize penicillin, I would point out that this was first accomplished by Robinson and his co-workers at Oxford by the method given a year or so ago.

Dr. J. A. Marriott, Loughborough, Leicestershire, England.

ANSWER.—According to available records, d-penicillamine hydrochloride was synthesized on Oct. 4, 1943 by Robinson and his co-workers. 2-Phenyl-4-ethoxy-methylene-5 (4) oxazolone was synthesized on March 14, 1944 by Robinson and his co-workers. 2-Styryl-4-ethoxymethylene-5 (4) oxazolone was condensed with dl-penicillamine on March 27, 1944 by Robinson, and this product had slight antibiotic activity. Robinson obtained evidence of active synthetic penicillin in mixtures of dl-penicillamine and 2-benzyl-4-methoxy-methylene-5 (4)-oxazolone seeded with natural penicillin on Nov. 26, 1945, but the Group at Merck's reported the first synthetic preparation to have antibiotic activity on Feb. 29, 1944 (one month before Robinson's group).

Since all groups were exchanging information, one group cannot claim priority in synthesis.

Du Vigneaud's role in the synthesis of penicillin was to demonstrate that the active material detected in the reaction mixtures prepared by the Merck group and by the Oxford group actually contained penicillin. This was done by (*a*) comparison of "antibiotic spectrums" of synthetic and natural material (report of March 1, 1945), (*b*) isotope "tracer" technic (report of Nov. 1, 1945) and (*c*) preparation of "concentrates" of synthetic material by "countercurrent distribution" technic (report of Dec. 15, 1945).

EFFECT OF FASTING ON BLOOD CHOLESTEROL

To the Editor:—When doing a quantitative blood cholesterol in a case of probable hyperthyroidism (with a metabolic rate of plus 31) should the blood be taken on a fasting stomach or not? I understand that fasting causes an increase in blood cholesterol, whereas in hyperthyroidism one would expect a decrease. If the case shows all the usual clinical symptoms of hyperthyroidism and if the metabolic rate is high and the blood cholesterol (fasting) is high is one still justified in making a diagnosis of hyperthyroidism in spite of the high blood cholesterol?

Eugene C. Lowe, M.D, Miami, Fla.

Answer.—Studies by Kartin, Man, Winkler and Peters demonstrated that in two days of complete starvation the concentration of cholesterol increased significantly in only a few of their subjects However, periods of fasting long enough to produce ketosis will cause elevation of the serum cholesterol

In hyperthyroidism the average concentration of serum cholesterol is below normal, but there will be many instances of normal values The finding of a higher than normal concentration of serum cholesterol should make one examine the other evidence for hyperthyroidism carefully but does not absolutely exclude that diagnosis

It is customary but not essential that the patient be fasting when blood is drawn for serum cholesterol determinations.

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LEAD SOLDER IN OFFICE STERILIZER AND LEAD PLUMBING

To the Editor—I had recently repaired a small office sterilizer measuring about 13 by 5 inches and noticed a solder used to stop leaking, which appears to contain lead. I should like to know if there is any danger of lead contamination in sterilizing instruments, especially syringes and needles used for parenteral purposes in such sterilization I understand plumbing used for drinking water is constructed with precautions against lead poisoning.

M D, New York.

Answer—The sterilization of instruments or syringes in an office sterilizer repaired against leakage by means of solder which contains lead will not give rise to the risk of introducing significant quantities of lead into the tissues of patients. Traces of lead will be deposited on such equipment, however, and in the case of syringes such traces may react to produce flocculation in injected preparations or solutions which can react with lead salts. Samples of blood or other body fluids taken for analysis for lead (for diagnostic purposes) by means of syringes sterilized in such equipment will also be too greatly contaminated to yield useful results.

Pipes and accessory equipment used for storing or carrying drinking water, as supplied by reliable manufacturers or dealers in the United States, are generally but not always substantially free of lead compounds Careless installation of such equipment, or repairs made by uninformed or careless persons, may introduce lead-bearing materials in the form of lead pipes, solder and joint luting compounds

THE VOICE AFTER REMOVAL OF CANCER OF VOCAL CORD

To the Editor—A white man aged 44, who had just returned from naval service, had a carcinoma of the right vocal cord. This was removed in toto along with the arytenoid. At present he is able to phonate, but his voice can be heard only at a distance of 10 feet in a quiet room. He is a lawyer in civilian life, and his future depends on his ability to talk before a jury without too much difficulty. Do you know of any one who has solved this problem? I thought it might be possible for him to use a contact laryngeal microphone similar to the type used in aviation intercommunication, along with a small type of public address system. Do you know of any one who makes this type of instrument? The instrument, if at all feasible, should be portable.

M D, Missouri

Answer.—A more usable voice might be achieved by one or more of the following means: 1. A careful laryngologic examination might suggest means for improving the shape and action of the scar tissue vocal cord which formed subsequent to the operation. 2. Voice training might prove helpful. Many of the universities now have teachers, specialists in this work, who could perhaps strengthen the voice by appropriate training. 3. The Wright Electro-Larynx (made by the Aurex Corporation of Chicago) is an electrical vibrating device which is placed against the larynx and the sounds produced are articulated in the usual fashion. Such a device might be helpful. However, the noise produced directly by the instrument is usually objectionable. 4. A lip microphone of the high fidelity type being used in naval aviation with suitable amplification might be satisfactory. This type of microphone is not sensitive to outside noise and has proved to be much better than the old style of laryngeal microphone.

EXCESSIVE BODY HAIR

To the Editor.—Is there any effective treatment to prevent or remove excessive hair on the bodies of women? I have seen several young girls with large amounts of long dark colored hair over the abdomen, back or hips. These girls are definitely handicapped. Is there any treatment, endocrine or otherwise, that will prevent or change this condition?

William M Bell, M D, Detroit

Answer—Although the information given is meager it is assumed that the questioner is not referring to (1) cases of extensive hairy nevi of the bathing trunk type or (2) cases of hypertrichosis associated with basophilic hypopituitarism (Cushing's syndrome) or adrenal cortical tumor. Authorities are in general agreement that if the latter two conditions are eliminated from consideration little can be expected from any treatment on an endocrine basis. It should also be mentioned that the use of x-rays to remove superfluous hair should not be resorted to.

If the amount of hair is not too great or the caliber too fine and it is considered sufficient handicap to indicate treatment, electrolysis may be employed with good results and without scarring, but in the areas mentioned it would seem that the end would hardly justify the tediousness of the procedure. If the amount is considerable and the caliber fine, the wax depilatories may offer the best results even though their effect is but temporary. Contrary to popular belief there is no evidence that the repeated use of such preparations will coarsen the hair, and it is possible that the reverse may be true.

COOLEY'S ANEMIA

To the Editor.—Will you please be kind enough to inform me if splenectomy is still being carried out in Cooley's anemia? Are there any specific measures employed? Are x-rays to the spleen used? Is iron of any value?

John A Ianacone, M D, Paterson, N J.

Answer—Splenectomy is of little benefit in the treatment of Cooley's anemia; some authorities feel that this procedure is contraindicated. The operation is followed by an increase in normoblasts in the peripheral blood, but the anemia is unaffected No specific form of therapy, including iron, has been of any help in this disease. X-ray therapy is of questionable value and at best is followed by only transient effects.

HYPERTENSION FOLLOWING BENADRYL

To the Editor.—In Queries and Minor Notes in The Journal, March 15, 1947, M D, New Jersey, reports the development of hypertension in a hay fever patient aged 49 which responded to medical care and rest. During the past year benadryl had been prescribed, and though the patient was relieved of the hay fever he developed a blood pressure of 192/120 Apparently withdrawal of the drug brought about a lowering of the blood pressure to 140/80. The question raised is whether or not hypertension can be produced as a side reaction from the use of either benadryl or pyribenzamine. The reply by the editor is that "it is definitely not the customary action of either benadryl or pyribenzamine to produce a hypertension." Permit me to report that benadryl produced a similar rise in blood pressure in one of my hay fever subjects—a man aged 55—who received ragweed injections preseasonally and seasonally for many years with good results but who was given benadryl in the summer of 1946 for possible added relief. He developed severe headaches and a rise in blood pressure of 200/110. Following withdrawal of the drug the blood pressure returned to his usual level of 138/85. The patient refused to try pyribenzamine. A colleague, following my report of this case at a medical meeting, informed me that he has heard of a similar untoward reaction resulting from benadryl. Thus there are now 3 cases of a transient hypertension resulting from benadryl. I hesitate to account for this reaction. Further studies should be indicated to explain adequately this type of untoward reaction following the ingestion of this antihistamine drug. Apparently similar reactions have not been reported in connection with pyribenzamine.

H. Harold Gelfand, M D, New York

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GRADUATE EDUCATION IN ANESTHESIOLOGY

E. A. ROVENSTINE, M.D.
and
E. M. PAPPER, M.D.
New York

Logic and experience have brought the conclusion that a medical teaching institution must change its prescribed methods of instruction occasionally. Institutions attempting to provide educational exercises in anesthesiology to meet the needs of potential specialists in this branch of practice have found that such changes are required frequently.

There are good reasons for the many alterations in procedure of teaching anesthesiology, originating from the errors of the past, the pressing need to keep abreast of current developments within the specialty and the task of meeting the requirements of the unprecedented advances of surgery. Other circumstances have complicated the efforts to establish and maintain adequate educational facilities to meet the increasing needs of anesthesiology. New drugs and methods have been accumulated rapidly, the scope of practice has been enlarged and the acute shortage of competent teachers has become pointedly evident. These considerations have served to confuse those who have taken the initiative in planning the development of the infant specialty. They have forced frequent evaluation and reevaluation of methods for teaching, many changes and no immediately predictable solution to many problems.

The serious study of teaching philosophies and technics in anesthesiology as well as in other intellectual disciplines necessitates an appraisal of past methods, a critical evaluation of present habits and an imagination which can anticipate the needs of the future. Inquiry into the early development of the specialty presents a valuable guide in understanding how things came to be what they are and in determining the errors that have been handed down ensconced in the protective halo of "tradition."

DEVELOPMENT OF THE SPECIALTY

In the earliest days of anesthesia the art of administering ether, chloroform and nitrous oxide was considered knowledge that was a mysterious property of the possessor and, of course, teaching was nonexistent. Gradually the concept that the management of anesthetic drugs was not a personal attribute but a legitimate phase of the care of surgical patients was acquired. scop[illegible] preceptor system was then inaugurated rather naturally and spontaneously in the manner of the other disciplines of medicine. However, it seems apparent [illegible] or no effort was made to do anything more than "pour ether." Our surgical forebears practicing at the turn of the present century can be forgiven readily if they considered this type of anesthesia as unworthy of and not requiring the skill of a physician. When anesthesia became purely a technical exercise requiring no judgment and moderate manual dexterity the utilization of anesthetic drugs was properly the province of technicians. Nurses were the logical personnel for this task and they were trained by physicians and then by one another in the technical aspects of rendering patients unconscious for surgical manipulations, a type of teaching that has persisted to the present, althougn its position in modern medicine is an anachronism. Despite the ascendency of the technician, anesthesia was not completely abandoned by the medical profession, but the quality of the efforts of physicians was highly unsatisfactory. The general practitioner not infrequently became an anesthetist either for want of some one better trained or more often as a means of supplementing an inadequate income. His interest in anesthesia was consonant with his skill as a rule, reflecting discredit or apathy on anesthesia as a special practice in medicine. The young physician member of the hospital house staff was no improvement over his elders. Anesthesia in some hospitals was delegated to the least experienced intern, who learned what little he could from his predecessor, greatly relieved to relinquish his undesired assignment. There is small wonder that understanding of anesthetic problems languished under such circumstances and that surgeons were more comfortable with a nurse performing anesthetic tasks. At least she didn't regard her work as an unwanted chore!

In the second decade of this century physicians with a prophetic interest in anesthesia emerged on the scene. These men learned anesthesia by actual performance in the operating theater, by careful observation of the responses of patients and by logical deductions based on their own experience. When clinical observations were inadequate in coping with practical or theoretical problems, assistance was requested and obtained from the laboratory. The value of scientific research was grasped quickly and produced the understanding that the infant specialty had tremendous potentialities for the improved care of patients, the acquisition of knowledge of biologic processes, the methods of their modification by drugs and a worthy intellectual discipline per se.

However, it can scarcely be stated that the first American anesthesiologists, in the full sense of that word, were taught anesthesia in any fashion approaching orthodox pedagogic principles. Rather must it be emphasized that they learned of themselves. This group became the first self-proclaimed specialists in anesthesiology, and the specialty owes them much for their contributions and more particularly for their interest in

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From [illegible]e Department of Anesthesia, New York University College of establishing anesthesia as a science and indoctrinating others with their habits of thought as well as the fruits of their knowledge.

In the era when modern anesthesiology took root, teaching was still very primitive. The attitude toward training was exceedingly naive. It was still considered adequate to have a student spend a few weeks with a preceptor or in a short course which was entirely devoted to the mastery of agents and other equipment in the operating room. To put it baldly, physician anesthetists were trained as technicians still, despite the fact that they were graduates in medicine and presumably were qualified to think in scientific terms and exercise clinical judgment.

THE WORK OF FRANK H. MC MECHAN

Although the practice of anesthesiology in some areas was vastly improved much earlier, systematic educational efforts are very recent and not widely adopted. Probably the earliest significant effort in gaining recognition for anesthesia in medicine was that of Dr. Frank H. McMechan, who organized a group of physicians interested in the specialty in the second decade of this century. The organization, which later became national and finally international in scope, together with its publications, is a permanent tribute to the tireless skill of Dr. McMechan in establishing anesthesia as a science and teaching it to younger physicians. The subsequent organization of the American Society of Anesthesiologists on a national scale represented the gathering of like minded physicians to further anesthesiology as a specialty. The educational consequences of this type of organization were readily apparent. Physicians exchanged information and experience about anesthesia informally and in the dress of meetings where information was formalized in the clinical or scientific paper. The publication of the journal *Anesthesiology* by the society provided additional educational opportunities. The establishment of the section in the American Medical Association and the inception of the American Board of Anesthesiology served to focus attention sharply on the necessity of requiring definite standards in knowledge and ability as prerequisite to the approved practice of the specialty. The participation of the Council on Medical Education and Hospitals in the problem of training physicians in the specialty proved a great aid. Residencies were approved for teaching after careful investigation of their facilities. Standards in teaching were therefore elevated, and the prospective anesthetist had available to him the information he required when he sought graduate instruction. The implications for the education of the future anesthetist became clear in principle, although the actual methods of providing this training were and are still decidedly fluid in character.

IMPORTANCE OF THE RESIDENCY

The principle established in the teaching of anesthesia by the standards set forth is founded in the residency, the prototype of graduate education in all other clinical specialties of medicine. Although the system of resident training is well established in all special branches of medicine, its true purpose and the position of the resident are frequently confused. The residency, when properly designed, consists of a careful instructional program which is destined to inculcate into the student independence of judgment, adequate theoretical knowledge and consummate technical skill. This is not a preceptor type of training in that the resident does not learn by imitation of his teacher or necessarily follow in his footsteps. He is taught all aspects of anesthesiology, with particular stress on the concept that his specialty is dynamic and that the procedures of today may be entirely changed tomorrow. If his education is such that flexibility and imagination become incorporated into his professional development, he is a fit product of a good residency. It must be emphasized decisively that the residency or the fellowship is fundamentally and primarily an educational experience for the incumbent and is not designed chiefly for the functioning of a department or even the care of patients in a hospital. These are necessary by-products of the residency but not the essence of its character. It is, of course, mandatory that a residency provide suitable clinical material for instruction and experience and also indoctrination in the basic sciences related to anesthesiology that is thorough and secure.

Much lip service has been rendered to the teaching of the fundamental sciences and little has in actual practice been performed. It has been stated in a careful and painstaking survey of graduate medical education[1] that these requirements can be met effectively by universities or by hospitals or groups affiliated with colleges of medicine or conducting medical programs on the same plane of scientific activity. The graduate of a residency conducted as an educational project will be a specialist of good clinical judgment, proficient technically and endowed with either an appreciation of the fundamental sciences or actual research experience in these fields. Unless the residency system can produce this type of specialist, it has failed in graduate medical education.

INSTRUCTION DURING THE WAR

The entrance of the United States into World War II seriously altered the entire philosophy of teaching in anesthesiology so radically that the full implications are not thoroughly grasped even today. The residency system was disrupted in its major aspects by the needs of the armed forces for medical personnel, and even so the supply of anesthesiologists was wofully inadequate. To meet the emergency, instructional plans were instituted in various military hospitals and in several universities and medical centers. Medical officers were assigned as students for periods ranging from several weeks to months. Most courses were given for three month periods. Even under ideal circumstances this type of training could not, by present standards, be sufficient for the development of specialists in anesthesia. It is to the credit of the officers graduated from these courses and their teachers that anesthesia practice in military life permitted the medical department to discharge its mission, but the training and ensuing professional activities were essentially stop-gap procedures There is little doubt, however, that interest in a thesia developed in many of these students and surgical confrères if one can judge by the rath number of veterans who have sought more t instruction in anesthesia after discharge fr services.

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[1] Graduate Medical Education, Report of the Commission on Medical Education, Chicago, University of Chicago Press, 1940.

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POSTWAR DEVELOPMENTS

In the postwar period the teaching of anesthesiology requires enormous versatility because of the manifold and divergent problems which are unsolved. The training of veterans who obtained their initial experience in the specialty in military service is an obligation which cannot be ignored by teaching institutions, and this is a task of tremendous proportions. Closely correlated with the indoctrination of individuals in anesthetic skills is the moral requirement to furnish competent anesthesia to patients in veterans' hospitals. Fortunately, the professional control of many of these institutions is supervised by medical schools and their faculties, with the possibility of conducting adequate teaching programs for the physicians on full time basis in the Veterans Administration. Great care must be exercised, however, in providing much more than the perfunctory stamp of approval by a university faculty in the veterans' or military hospital. Teaching on a par with academic standards is a goal which must be attained.

American anesthesiologists are also confronted with the necessity of thinking in global terms perhaps more than our colleagues in other specialties, since the extended development of anesthesia is not worldwide. Knowledge of even basic tenets in anesthesiology is absent on much of the European continent and in the Orient because of the devastation of war and the prolonged period of domination of European medicine by the sterile Nazi philosophies. It seems necessary that provision be made within the framework of the pertinent United Nations committees and directly by American teaching centers for the training of many foreign physicians in anesthesiology in the United States.

It is clear, then, that the coming of age of anesthesiology, the great demand for competent specialists and the appalling shortage of qualified anesthesiologists necessitate a program of training which must be wider in scope than anything planned heretofore. The opportunity for a satisfying and mature professional life in the specialty demands groups of students of a caliber equal to that in other branches of medicine. Many more residencies on the graduate level, in the full sense of that word, are required to discharge these obligations. Of necessity the colleges of medicine and other teaching medical institutions will not have fulfilled their responsibilities completely until satisfactory teaching activities are established for anesthesiology and other specialties in which the demand overwhelms the possible supply. This situation will exist for the foreseeable professional lifetime of most of us.

THE TRAINING AT NEW YORK UNIVERSITY

The responsibility for training anesthesiologists has been keenly felt and willingly accepted at New York University in collaboration with its affiliated hospitals. From the residency in its simplest form and with a handful of incumbents, the department has grown in numbers and stature to include educational opportunica for graduates in medicine in keeping with the attiscop developed as the specialty grew. It is necessary natu out that teaching plans do not burst on the discer n full bloom but are the results of painstaking ently painful evolutionary experiences.

sidency has been and will undoubtedly con- be the bulwark of graduate education as we d it. Residents are carefully selected on the previous achievement as undergraduates and interns and an estimate of their probable abilities in anesthesiology. The process of selection cannot be overemphasized if physicians of real ability are to be educated on a graduate level. The resident is taught all varieties of clinical anesthesia, nerve blocking and inhalational and parenteral therapy under competent supervision for two years in most instances and three years for others who show promise of conducting independent investigations or becoming directors of hospital departments. Students whose interests and achievements point to academic work are affiliated with the department for longer periods. Most of the residents are intimately associated with at least one investigational project being conducted by members of the permanent staff of the university. At the present time there are twenty-seven physicians receiving such graduate training in the hospitals affiliated with New York University.

An extremely important technic of graduate education is the staff meeting or staff conference. The department conducts two such meetings weekly. The elder and more firmly established of these is an evening meeting which is open to all interested physicians in the community but is designed primarily as a teaching experience for the resident staff. The agenda are arranged by a senior resident and the meeting is conducted by the director. An important paper of interest to anesthesiology is presented by a resident, and discussion is carried on by the director. Current cases of interest are then described by the residents, and comments and criticism emanate from the resident staff, the director and members of the university faculty. Discussion is lively and often controversial. Exposure to and participation in this type of scientific conclave is valuable to the resident staff in the acquisition of new knowledge per se, the airing of opinions of physicians of greater experience and in learning the technic of organizing case material and presenting it to a critical and well informed audience.

The other weekly exercise is more recently established and is for the resident staff exclusively. It occupies three to four hours and is arranged by the students under the supervision of a member of the university faculty who attends the meeting as a moderator and guide to discussion. Approximately half the meetings are devoted to the maintenance of a Journal Club, which includes all the basic science and clinical periodicals related to anesthesiology. Each resident summarizes, for the group, the papers of interest and importance to the specialty, and questions and discussions are enjoyed freely. Since the atmosphere is extremely informal, all points of issue are elaborated on thoroughly. This period also serves as a medium for ward rounds, radiographic review of interesting films, the review of topics and problems of concern to the residents and the demonstration of new or difficult technics in nerve blocking or other phases of anesthesia.

In addition to the residency program for the training of specialists the Department of Anesthesia includes in its activities an extensive postgraduate course of instruction for physicians already engaged in anesthesiology. The course was originally designed to meet the needs of physician veterans whose specialty education was abbreviated by the war or whose instruction had been substandard because of the disruption of teaching facilities during that period. It became evi-

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dent, with early experience, that this educational project was flexible enough to provide practicing or prospective specialists with information of the newer advances in anesthesiology and the pointed relationship between the basic sciences and clinical anesthesiology.

The major course of didactic instruction is conducted five afternoons a week for a period of six months. The teaching load is carried by the regular members of the faculty of the Department of Anesthesia except for occasional lectures by distinguished leaders in medicine whose special field of endeavor has definite bearing on anesthesiology. The avowed goal, prior to the first course, was thorough indoctrination in the basic sciences and in clinical anesthesiology, but the technic of presentation required a willingness to experiment and attempt new teaching technics. The well established approach to teaching one science after another in rotation with appropriate text assignments was abandoned as unsatisfactory in principle for postgraduate students. The possibility of enlisting the assistance of the preclinical faculty was seriously considered and unsuccessfully tried. It is the firm conviction here that the teaching of fundamental sciences to anesthesiologists is appropriately the sphere of the Department of Anesthesia, since the teachers are competent to sort material properly and are able to avoid the morass of a maze of details which, important to the scientist, need application to clinical anesthesiology. The burden in man-hours for the clinical faculty is greatly increased but well worth accepting as judged by the student development in accord with the best tenets of anesthesia.

BASIC CONCEPTS

The philosophy of teaching this course is based on the assumption that postgraduate students are mature persons and desire primarily to learn anesthesiology. For that reason textbook assignments are not made, but material of importance in the form of review articles and current scientific papers which pertain to the subject under consideration is suggested. It was most interesting to discover how frequently and effectively students became familiar with this type of study.

The actual teaching program includes lectures, laboratory exercises, seminars, demonstrations, a thesis and all the other accepted pedagogic methods, but the organization of instruction is a new departure here. Clinical lectures and discussions occupy approximately half the course and are deliberately interspersed with the related basic sciences. For example, the subject of pulmonary pathology is juxtaposed in time to a clinical consideration of atelectasis. The breaking down of what, in the final analysis, are artificial boundaries between fundamental sciences and the clinic is completed in this manner. The student quickly grasps this concept and realizes early and adequately that he is learning material which has definite application in his thinking and his work rather than simply a necessity for the passing of board or other examinations. Not only is his appreciation of scientific material enhanced, but he is taught in this manner to apply the information and the habits of thought of the scientist to his clinical problems. More concisely stated, anesthesiology is presented as an integrated discipline in which the basic sciences are really embraced and not merely worshipped in the far and traditional distance.

It is perhaps necessary to illustrate in greater detail the precise manner in which the material is presented, because of its differences from orthodox pedagogy and for the possible interest of others responsible for teaching programs in anesthesiology.

The first week is devoted to a serious effort to gain the students' interest and is the reason for introducing the dramatic elements in anesthesia practice at the outset. The subjects of hemorrhage, sudden death in the operating room, delirium and the problems of the aged are dealt with in clinical fashion and are illustrated by a large number of actual patient problems and anesthetic records pertinent to the discussion. The form of teaching these subjects is panel in type, with all members of the faculty as participants. This type of presentation in the introductory week has achieved its purpose in setting the tone for the remainder of the course.

The second week is concerned with the theories of narcosis, the fundamentals of simple inhalation technics, the anatomy of the respiratory tract, the signs of anesthesia, and instruction in the proper use of the medical library.

The third week develops this material in that physiologic and biochemical concepts of respiration are presented together with clinical disturbances related to respiration, such as hypoxia and cyanosis. The clinic is further emphasized in the consideration of resuscitative procedures. Thus anatomic, physiologic and chemical facets of respiration are woven together on the clinical loom.

The fourth week completes the pulmonary material in consideration of special respiratory problems of obstruction and serves to introduce the discussion of the endotracheal catheter as an airway. This period introduces the guest lecturer. The week is rounded out by the presentation of several classic papers in the literature with biographic sketches of the authors.

The fifth week is concerned with the teaching of spinal and epidural anesthesia, its clinical aspects being freely coordinated with the pertinent neuroanatomy and neurophysiology.

The sixth week is largely devoted to metabolic considerations, including the applications which disturbed metabolism have to anesthesiology. A day of physical chemistry in which the gas laws are delineated completes the week

The physiology of the circulation is considered in the seventh week and is discussed in connection with disturbances in cardiovascular activity which may occur during operation or as the result of the action of anesthetic drugs. Special cases are also considered in detail. The management of refrigeration, patients with diaphragmatic hernia and barbiturate intoxication is included.

This philosophy is followed throughout the twenty-four weeks of the course, and the organization of subjects is maintained in similar fashion until the entire scope of the specialty and its related sciences has bee considered. Student initiative is encouraged in second half of the course in the form of student pl and executed seminars and the writing of a the

In a course which is both clinical and scie may be of interest to categorize the time as given over to the various sciences, special acti clinical subjects. Physiology receives 30 hou macology 24, anatomy 24, pathology 14 an istry 7. Animal laboratory exercises in pharn

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are given 16 hours, physiology 14 hours and cadaver dissection 30 hours. Some 15 hours are devoted to seminars and reviews, which are conducted by the students and the entire anesthesia faculty as a joint enterprise. Occasional informal hours are planned for question periods, discussions on economics and other projects. These usually total 4 hours. Approximately 150 hours are devoted to the clinical aspects of the specialty.

Although this course was planned as a postgraduate exercise, experience with it has been such as to consider it a necessity for the residents in addition to its first conceived function. The admixture of postgraduate students and residents in a single course has been a profitable one for both groups and the university faculty.

Thus far this discussion has been confined largely to the urgent problem of training anesthesiologists *de novo,* but instructional demands on teaching institutions extend to the postgraduate level, which, in effect, is equivalent to satisfying the educational needs of physicians who are already practicing the specialty. All of medicine is fluid, and newer advances require periodic opportunities for reorientation, the appreciation of changing points of view of the leaders in the various fields of medicine and exposure to improved scientific and clinical developments. Short courses in various aspects of anesthesia of several weeks' duration are adequate if specialists are encouraged to participate enthusiastically as teachers and students, depending on their interests and qualifications.

An example of such a course here is one in regional anesthesia. It is intensive and is given for three weeks semiannually. Included are cadaver dissection, practical instruction on patients in nerve block procedures and complete didactic coverage of diagnostic and therapeutic nerve block. This course is designed for anesthesiologists and others who desire special training in regional procedures. In this course also the discussion and lecture material is closely correlated with the dissection and is applied directly to appropriate patients.

At the present time the postgraduate division of the Department of Anesthesia has had experience covering two academic years. The impression has not been gained that the ideal in graduate or postgraduate education has now been achieved. Improvement and change will always be incorporated in the attitudes of the faculty, and educational errors, when found, will be eliminated. The types of training and teaching that have been outlined are most encouraging in achieving the ends desired—a group of physicians who have learned to look on anesthesiology as a highly developed clinical art which rests on a firm scientific foundation, the constituents of which they are able to evaluate critically and to which they can perhaps even furnish contributions of value.

The attitudes toward the education of anesthesiologists presented in this discussion are based on the advantages afforded by medical schools which are iented sympathetically toward the development of the ialty. It is in institutions of the university classifi n that adequate library possibilities, abundant al material, opportunity for laboratory experience academic atmosphere may be collected for the of the student. It is the obligation of these ons to provide graduate education in anes gy.

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PROGRAM FOR THE ACTIVATION OF NEUROLOGY UNDER THE VETERANS ADMINISTRATION

PEARCE BAILEY, M.D.
Washington, D. C.

A year ago Percival Bailey[1] in his chairman's address to this section presented factual data to demonstrate the present ills of neurologic practice and recommended, among other things, that neurologists leave most of the practice of psychiatry to psychiatrists and that neurology become more closely alined with its related basic sciences and with neurosurgery. Whatever the prevailing opinion might be concerning the feasibility of a separation of neurology from psychiatry (at least for the time being), it is evident that Dr. Bailey's paper portrays objectively the present critical state of clinical neurology and may well serve as the landmark for a renaissance in the practice of neurology by neurologists.

Two questions come immediately to mind in evaluating the present status of and the future outlook for clinical neurology, namely: 1. Is there an actual need for clinical neurologists in the diagnosis and treatment of nervous and mental diseases? 2. If such an actual need exists, are neurologists as a group prepared to formulate and back a positive program in order to induce more bright young men to join their ranks?

We are not qualified to state the need for clinical neurologists in civilian practice. This has been emphasized by others.[2] However, we do know something about this need in the Neuropsychiatry Division of the Veterans Administration. Among the most persistent appeals coming into Washington from Veterans Administration hospitals and clinics are requests for the services of qualified neurologists. Nine times out of ten the reply must be "Regret, but no neurologist available for that area nor is there any prospect of finding one in the immediate future." The demand for qualified neurologists in the Veterans Administration is large, and at present we can only partially meet it, even after tapping all available outside sources. Perhaps the thousands of veterans with neurologic disabilities arising from two world wars will play some part in the shaping of the future of clinical neurology!

It is estimated that at least one third of the neuropsychiatric patients in general hospitals of the Veterans Administration are neurologic cases. About 50,000 epileptic veterans will require study and treatment in the next ten years. Among the casualties of World War II there are about 20,000 craniocerebral injuries, almost 3,000 paraplegics and 600 post-traumatic aphasic patients. Neurologic residuals from acute infections were proportionately far greater in World War II than in World War I, since chemotherapy and improved methods of care saved the lives of many men who with similar diseases died in World War I. As time goes on and veterans become older and hence more vulnerable to neurologic insults the number will steadily increase. For example, the peak of the neurologic census from World War I is not expected to be reached until 1949.

Read before the Section on Nervous and Mental Diseases at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

[1] Bailey, Percival: The Practice of Neurology in the United States of America, J. A. Am. M. Coll. **21:** 281, 1946.

[2] Wilson, G., and Rupp, C.: Present Trends in the Practice of Neurology, J. A. M. A. **133:** 509 (Sept. 22) 1947. Bailey.[1]

A hint of what may be expected in the way of an increasing census of diseases of the nervous system is observed by a glance at the incidence of neurosyphilis. During the fiscal year of 1945, 2,556 veterans were treated in hospitals for symptomatic neurosyphilis. Of this number only 233 were veterans of World War II, the remainder, or 2,323, being veterans of previous wars. Now the question is naturally posed as to how many veterans of World War II will eventually develop neurosyphilis. At present this cannot be very accurately estimated, since the long-term results of the newer treatment methods for syphilis are not known. The Subcommittee on Venereal Disease of the National Research Council has estimated that approximately 12,500 veterans will develop symptomatic neurosyphilis over a spread of twenty-five years. This estimate is considered to be minimum, since it was made before it was known that variation had occurred in the potency of commercial penicillins.

To give these veterans with neurologic disorders the kind of medical study and treatment to which they are entitled by law and to develop this unique opportunity for follow-up studies on the largest group of neurologic patients ever to be assembled, so to speak, under a single roof, an ambitious program in neurology has been promulgated by the Veterans Administration which transcends strict intramural bounds by dedicating itself to the task of stimulating an increased interest in the general field of neurology wherever there is a hope to find a worthy response. Today there are not enough qualified neurologists in the country with sufficient time at their disposal to provide the desired type of care, and, unless more young men of high caliber can be attracted to neurology, the future care of veteran neurologic patients will be placed at a distinct disadvantage.

Our program, briefly, consists of two parts. The first aims at the development of existing facilities in neurology to the highest possible professional level with the materials that are now available. The second is designed to attract young physicians to the discipline of neurology in order to keep in step with expanding needs. Both parts of the program are now in active operation, but the former is naturally more advanced than the latter.

Let us consider the first part of the program in the light of its objectives and the work that has been accomplished during the first ye[illegible] This may be summarized under six [illegible]: (1) decentralization of responsibility to the various branch areas of the Veterans Administration, (2) recruitment of qualified neurologists, (3) establishment of neurologic centers, (4) organization of residency training programs in neurology, (5) organization of specialized professional courses for neurologists and ancillary personnel and (6) promulgation of a sound program in research.

DECENTRALIZATION

In line with the overall policy of the Veterans Administration, considerable authority and responsibility for neurologic activities has been decentralized to the various branch offices in order to expedite activity. There are thirteen of these branches throughout the country, and the relationship of each branch to the central office in Washington is somewhat analogous to the relationship of state government to federal government in a jeffersonian democracy.

RECRUITMENT

Early in the task of reorganization of neurology in the Veterans Administration it became apparent that an outstanding deficit was the lack of qualified personnel to handle the new and staggering load of patients. Accordingly, branch section chiefs in neurology were appointed to supervise the activities in their respective areas. These section chiefs are all men of professorial rank in neurology and are members of the American Neurological Association. Moreover, the services of an additional 100 qualified neurologists were obtained, many of them members of the American Neurological Association, to act as full time and part time physicians and as attending physicians and consultants to hospitals and clinics. These men supply a nucleus for future growth.

NEUROLOGIC CENTERS

Seven neurologic centers have been established in general medical and surgical hospitals of the Veterans Administration, and additional ones are under development. These centers serve as diagnostic and treatment units to which patients from less adequately equipped hospitals and field stations may be referred. Certain national projects for the rehabilitation of large groups of veterans with similar neurologic disabilities, such as the paraplegics and the post-traumatic epileptics and aphasics, are being carried out in these centers.

RESIDENCY TRAINING

Eight residency training programs which provide for three years of training in basic and clinical neurology, including six months in psychiatry, are now under way. These residencies are under the direction of the neurologic departments of medical schools as prescribed by the dean's committee plan of the Veterans Administration. According to the plan, residents spend half their time in the Veterans Administration neurologic center and the remaining half in the lecture rooms, laboratories and hospitals of the medical school. The type of training received by these residents probably compares favorably with that of neurologic institutes. Moreover, in many instances the Veterans Administration residents have the benefit of contacting a greater variety of clinical material. Thus, for example, in one hospital with a residency training program there are 300 paraplegic patients in addition to 225 beds allocated for a neurologic diagnostic service.

PROFESSIONAL COURSES

It has been necessary to organize professional courses in specialized fields which are relatively young and have not as yet set up uniform standards of skill or performance, as for example electroencephalography. To date 35 physicians and technicians have been trained in electroencephalography under Dr. Frederic A. Gibbs at the University of Illinois, and of course we intend to train many more. As the Veterans Administration electro- [illegible] laboratories build up, this program [illegible] to the branches. Other profession[illegible] courses now in operation provide for the training [illegible] personnel in the rehabilitation of aphasic patient[illegible] for the instruction of nurses in neurologic and [illegible] surgical nursing.

RESEARCH

No medical program can be long maintained [illegible] gear without the benefit of the stimulus provid research. This has particular reference to the pr

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of the Veterans Administration, where enthusiasm is apt to lag as the exhilaration provided by the war diminishes. Moreover, the vast amount of clinical material now available for medical follow-up studies supplies an impelling reason to use this unique occasion to advance our knowledge of injury and disease. Much time and thought have been given to this problem, but the organization of research projects in the Veterans Administration is necessarily slow. However, a national research project in epilepsy under the supervision of Dr. William G. Lennox has been started at the Cushing Veterans Hospital near Boston. Additional projects are pending.

The essence of the second part of our program is to attract, either directly or indirectly, more keen young men to the discipline of neurology in order that the Veterans Administration will be in position to draw its neurologists from a larger pool of talent than that which exists today. A veil of confusion envelops the entire subject of neurology. Prospective neurologists sense this confusion and are discouraged by what are construed to be practical disadvantages for one contemplating a career in clinical neurology. One naturally hesitates to cast one's lot with what has been termed by some as "a dying race," even though it may not be supported in fact. The confusion surrounding the status of neurology must be cleared and the practical disadvantages confronting prospective neurologists must be ameliorated before hopes of acquiring much new talent can be validly entertained.

From a survey of the literature and from our experiences in recruitment of neurologists we have listed what appears to be the major obstacles and sources of confusion facing physicians contemplating a career in neurology. Having accomplished this, we have attempted to fashion our program in such a way that it will absorb as far as possible these impediments and thereby clear the obstacles which apparently are blocking the path of entry for prospective neurologists. We have listed these obstacles and sources of confusion under four headings, namely (1) the neurologist's problem of earning a living, (2) relation of neurology to neurosurgery and the basic sciences, (3) the neurologist's dilemma with regard to therapy and (4) the prevailing psychologic orientation in psychiatry.

THE NEUROLOGIST'S PROBLEM OF EARNING A LIVING

The chief resistance of physicians predominantly interested in neurology to enter the field of neurology is a fear of not being able to "make a decent living" from an exclusively neurologic practice. The basis of this fear appears to lie in the fact that the clinical neurologist in private practice can no longer count on deriving a substantial portion of his income from treating the psychoneuroses to compensate for the frequent dearth of neurologic patients. Psychoneurotic patients have largely passed to the psychologically oriented psychiatrist, who may be better equipped both temperamentally and experientially for an understanding of this type of patient.

The Veterans Administration, by offering residency ing and full time and part time positions to neurolo- and prospective neurologists has diminished this ic hazard. Qualified neurologists may secure positions with respectable pay and may devote time to clinical neurology or its related basic r they may hold part time positions as attend- cians or consultants and receive up to $6,000 a year for this work, which would help to compensate for the paucity of neurologic patients in private practice.

Thus, for example, a doctor may begin his career in an approved residency alined with the teaching program of a medical school, with pay at least equal to any corresponding civilian residency. After completion of his three years of training he may obtain a full time position with valid remuneration in the neurologic service of a Veterans Administration hospital until the time he is eligible for certification as a specialist. During this period he may have the opportunity without expense to add to his psychiatric training or to take up surgery or to increase the scope of his professional skill by taking a training course in electroencephalography or by joining some special research project, as for example the one in epilepsy. On certification, the young physician may continue in a higher grade on a full time basis with the Veterans Administration or he may enter civilian practice and be eligible for appointment as an attending physician to a Veterans Administration hospital or clinic, for which service he could receive up to $6,000 a year. It is hard to conceive of a plan that would offer more security to a young doctor during the trying years of basic training and beyond.

RELATION OF NEUROLOGY TO NEUROSURGERY AND THE BASIC SCIENCES

Another nebula clouding the perspective of the future neurologist is what Walshe and Symonds[3] describe as "the nettle of future relationships of neurology to neurosurgery." The basic question is Where does neurology end and neurosurgery begin, and vice versa? It is likely that this problem can be resolved only by a closer entente between the neurologist and the neurosurgeon, both of whom should implement and complement the other. With the collaboration of Dr. R. Glen Spurling, director of neurosurgery in the Veterans Administration, a closer integration between the two specialties is being sought by combining them, wherever practicable, into a single unit of activity.

Therefore, what has been termed so far as neurologic units are actually, as far as possible, neurologic-neurosurgical units. All patients, except acute surgical emergencies, are admitted to the neurologic service for initial study and work-up. Subsequent transfers of surgical cases are made to the neurosurgical service after consultation with the neurosurgeon. On completion of the necessary procedures, patients are returned to the neurologic service for convalescent care. Neurosurgeons have access to the neurologic part of the unit to increase their knowledge of neurologic disease, whereas neurologists have similar privileges on the surgical side of the unit in order that they may gain a closer understanding of neurologic surgery.

Few would resist the plea of Percival Bailey[1] for a closer union between clinical neurology and its related basic sciences. He remarks "Neurophysiology in this country is making rapid advances which are just crying to be applied in the clinic" and later adds "There are innumerable unsolved problems in clinical neurology awaiting the investigator who comes into the field through some basic discipline which can apply to them." Indeed, one of the difficulties we encounter in the recruiting of neurologists is this very lack of coordination between laboratory and clinic.

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1931, p. 33.

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[3] Walshe, F. M. R., and Symonds, C. P.: Neurologist and Neurosurgeon, Brit. M. J. 2: 364 (Sept. 15) 1945.

The Veterans Administration has taken cognizance of the need of a closer liaison between laboratory and clinic. By means of the dean's committee plan, some of our neurologic services have been brought into close contact with the laboratories of medical schools. But only a few medical schools provide adequate laboratory facilities for the investigation of all aspects of neurologic problems. Therefore we have included in our program provisions for the establishment of additional laboratories. This, however, has not as yet progressed beyond the planning stage.

THE NEUROLOGIST'S DILEMMA WITH REGARD TO THERAPY

The traditional garb of the neurologist is that of a diagnostician *par excellence* with little interest in therapy. Cloaked in this manner he has been forced to witness many cases which were entrusted to his care taken over by others because their treatment had been initiated elsewhere. Riley[4] sounded a knell of warning as to what might be expected as the result of the neurologists' indifference to therapy, but little has been done about it. Probably a great source of discouragement to physicians entertaining the possibility of becoming neurologists is the lack of a therapeutic orientation in neurology—particularly in this age, which is unmistakably therapeutically minded. In addition, it gives rise to the paradox that those who understand the structural implications of a disease best are not entrusted with its care—a phenomenon which is not in consonance with the optimal interests of the patient.

In the Veterans Administration the primary medical objective is and must be therapy. It is our duty to assess the mental and physical assets of each patient and develop them to the maximum in order that he will be less of a burden to himself, to his family and to the government. This strong therapeutic orientation should help solve the neurologist's dilemma about therapy. Our residents will be thoroughly trained in all methods of treatment of neurologic disorders, and it is expected that they will continue to apply the results of this experience after completion of training.

To cite an example of the therapeutic bent of the Veterans Administration would be timely. About eight months ago the Neurologic Service of the Veterans Administration Hospital at Minneapolis, which is under the supervision of Dr. A. B. Baker and Dr. Joe Brown, inherited 73 patients, all veterans of World War I. These patients were all bedridden; some had been in bed for over ten years—they belonged to that class of neglected men known as chronic neurologic patients. They were a heterogeneous group composed of cases of parkinsonism, multiple sclerosis, cerebellar atrophies, tabes dorsalis and vascular disease.

The chiefs of this service organized a "total push" program of therapy. In collaboration with the Medical Rehabilitation Division and its ancillary services and utilizing methods of muscle reeducation, physical therapy, prosthetic devices and psychologic motivation technics they began their job to rehabilitate these patients. The results more than justified the effort involved. Within eight months all but 6 of the original 73 patients were out of bed. Thirty-one patients have been discharged to their homes; 8 of this number are capable of self support and the remaining 23 are able to do some work. An additional 15 have achieved self care. Twenty-one more are up and about, enthusiastically working on their rehabilitation, and have a good outlook for the future. It is believed that by the use of these therapeutic methods about 75 per cent of chronic neurologic veterans can be placed on a level of self care, which means greater happiness which is their due, and an enormous saving to the government.

It is true that this form of therapeutic attack may lack the drama and sensationalism associated with some of the more rapid forms of medical therapy, but it supplies a wedge by means of which our neurologists can actively push further into the general treatment field with the ultimate goal of assuming responsibility of the treatment of all diseases which belong in their bailiwick. It is only in this way that veterans with neurologic disease can be assured the highest level of medical care from time of diagnosis to time of disposition.

THE PREVAILING PSYCHOLOGIC ORIENTATION IN PSYCHIATRY

Another distraction to the budding neurologist is the dramatic rise of the psychologic approach to the study of mental and emotional disorders. This methodology, which has been too long neglected in medicine, has risen to the fore and now occupies the driver's seat in psychiatry. Concerned on the one hand with the needs of the individual as a total person, particularly in terms of the dynamics of his psychosexual development and interpersonal contacts, and on the other hand entering the domain of anthropology and social psychology, as it applies to the betterment of existing social ills, "dynamic psychiatry" has a tremendous scope which encompasses the entire field of human relationships. This gives a compelling gregarious and literary appeal to the purely psychologic aspects of psychiatry. There is little question that the present lure of the prevailing psychologic orientation in psychiatry has diverted some young physicians from devoting much time to the study of neurology.

In spite if the enormous contribution of the psychologic approach to the effectiveness and growth of psychiatry, the irrefutable argument for further progress in neurology as an aid both to itself and to psychiatry is the fact that nearly all stimulus impulses and experiences are integrated and elaborated into higher reaction patterns through the mediation of the nervous system. Hence, in order to develop an ever increasing knowledge of neuronal activity and of the meaning of human behavior in terms of underlying physiologic mechanism, it is necessary to continue to increase our grasp of the functions and structure of the nervous system. At the present time this can be accomplished only on a proper scale by an activation and integration of the entire field of neurology.

The only persons to stimulate a renaissance in neurology and to convey its meaning to the rising generation of physicians are neurologists. But neurologists are noted for a certain aloofness to pushing or maintaining their cause, and for their conservatism. Would it nc
be better to modify this attitude somewhat, particular
in view of the present day aggressive trends in alm
all medical specialties? Should not the traditional
servation be relaxed to some degree? Would it n
better for neurologists to unite in a spirit of con
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activation of clinical neurology? I am convin
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[4] Riley, H. A.: Training of the Neurologist: Neurologia Irredenta, Arch. Neurol. & Psychiat. 29:862 (April) 1933.

ABSTRACT OF DISCUSSION

DR. J. M. NIELSEN, Los Angeles: Dr. Bailey has pictured in detail the dilemma of neurology. The two fundamental causes of the situation are that the neurologist has not sufficiently expanded his interests to help out other specialists on borderline cases and that the neurologist will of necessity have to diagnose and treat psychoneuroses, for which purpose he needs considerable knowledge of psychiatry. I should like to limit the discussion now to the means by which the neurologist lives, for if he does not live he cannot serve his specialty regardless of how well he is prepared. The neurologist serves the general practitioner as a diagnostician and as a means of placing therapy on a sound basis. He serves the otolaryngologist and the ophthalmologist in distinguishing when a disease at first limited to one region of the body invades the brain. He serves the orthopedist in differential diagnosis of painful conditions and in diseases of the muscles. He serves the general surgeon in differentiating functional abdominal states from surgical ones. The anesthetist refers cases when complications arise. The obstetrician refers both mother and baby for trauma at birth. The urologist asks for help on suspected neurogenic bladder, the radiologist for interpretation of etiology of roentgenologic conditions. Even the psychologist and the electroencephalographer ask for help. Last but not least, the Industrial Accident Commission constantly needs help in a neurologic survey of traumatic cases. If the young neurologist will make himself capable of rendering genuine help in these fields, he will have no difficulty making a living.

CARCINOMA OF THE LARGE INTESTINE

Diagnostic Errors in Relation to Location of the Lesion

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HAROLD A. NEIBLING, M.D.
and
JOHN M. WAUGH, M.D.
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In spite of the existence of accurate diagnostic procedures and intensive educational campaigns directed toward both physician and patient, many carcinomas of the large intestine become far advanced before a diagnosis is made. In 1924, after reviewing the records of 1,937 patients who had carcinoma of the rectum or sigmoid, Buie[1] made the statement that 1 of every 5 of these patients had been operated on for hemorrhoids or had been treated symptomatically for some type of organic disease, other than the carcinoma. The aforementioned author has made this statement repeatedly since that time. It is remarkable, however, that during the period of their symptoms just as many patients as heretofore continue to receive treatment for some supposed condition of the rectum or colon other than the carcinoma, which thus remains undiscovered.

The purpose of our study was to determine the nature of the treatment in relation to the location of the carcinoma. More specifically, the study consisted in considerations on (1) how many carcinomas of the large intestine within reach of the examining finger are diagnosed and treated as some other disease during the course of the patient's symptoms, the carcinoma remaining undiscovered; (2) how many additional carcinomas which should have been visible at sigmoidoscopic examination are erroneously treated, and the nature of the treatment; (3) how many carcinomas discernible in roentgenograms of the colon likewise are erroneously treated, and the nature of the treatment, and (4) how many carcinomas of the large intestine are discovered only at surgical abdominal exploration.

To answer these questions we studied the records of all patients with carcinoma of the colon and rectum who came to the Mayo Clinic during a one year period; that is from Jan. 1, 1944 to Jan. 1, 1945. There were 817 patients in the group with a total of 825 lesions; 492 of the patients were men and 325 were women, a ratio of 3:2. The situations of the lesions are represented in the accompanying illustration.

LESIONS ACCESSIBLE TO THE EXAMINING FINGER

It should be emphasized that although we have divided the 817 patients into four groups, according to the method of diagnosis employed, the diagnostic procedures overlap. That is, the use of one diagnostic procedure frequently calls for the use of another as a supplementary or confirmatory aid. For instance, a rectal carcinoma, although palpable, should be examined with the proctoscope to gain additional information, such as the degree of obstruction, the situation of the lesion and whether or not polyps are associated, and to permit removal of a specimen for biopsy. Similarly, if a polyp or bloody mucus is visualized with the proctoscope, roentgenologic study of the colon is indicated.

Whether or not a carcinoma of the lower part of the bowel is palpable on digital examination is dependent on several factors: (1) the situation of the lesion; (2) the position of the patient at the time of examination; (3) the degree of obesity and muscular development of the patient; (4) the ability of the patient to cooperate; (5) the thoroughness of the examiner, and (6) the mobility of the lesion.

Of the entire group of 817 patients in this study, 634, or 77.6 per cent, had carcinomas which were located in the terminal portion of the bowel, meaning the sigmoid, rectum and anorectal region. The lesions of 444 patients (70 per cent of the 634 who had lesions of the terminal part of the bowel or 54.3 per cent of all those who had carcinomas of the large intestine) were palpable on digital examination or were within reach of the examining finger. Many of the lesions of the sigmoid were palpable in the form of extrarectal masses, and actually were suspected rather than being directly palpable. Nine of the 444 patients who had lesions within reach of the examining finger had to be examined under the influence of caudal sacral anesthesia because of their inability to cooperate or because the lesion had extended to involve the sensitive anal area.

Of the 444 patients, who had palpable lesions, 102, or 23 per cent, had received treatment during the course of their symptoms other than therapeutic measures directed toward the unsuspected carcinoma that later was found to be within reach of the examining finger. Analysis of some of the various therapeutic procedures instituted in this group of 102 patients showed that 42 underwent surgical treatment for hemorrhoids, and that 4 of these patients were subjected to this procedure twice. Another group of 35 patients received a form of injection treatment for hemorrhoids. Four patients underwent surgical treatment of fissure; 4 underwent fistulectomy; 4 others underwent some form of anorectal surgical procedure, the exact nature of which the patient did not know. Three patients were treated for colitis and 3 for amebiasis. Another 4 patients received electrical treat-

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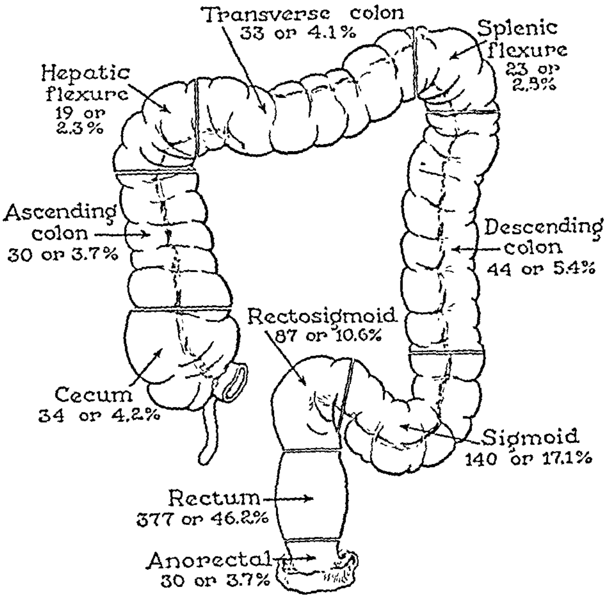
From the Section on Proctology (Dr. Jackman) and the Division of Surgery (Dr. Waugh), Mayo Clinic, and Fellow in Surgery, Mayo Foundation (Dr. Neibling).

[1] Buie, L. A.: Proctoscopic Examination and the Treatment of Hemorrhoids and Anal Pruritus, Philadelphia, W. B. Saunders Company, 1931, p. 33.

ment for hemorrhoids; 3 others were treated with suppositories. Interesting is the fact that, as previously mentioned, each of 4 patients underwent two operations for hemorrhoids while they had the symptoms of carcinoma.

LESIONS NOT ACCESSIBLE TO THE EXAMINING FINGER BUT VISIBLE AT PROCTOSIGMOIDOSCOPY

As stated previously, proctoscopic or sigmoidoscopic examination is not a substitute for digital examination, just as digital examination is not a substitute for that with the proctoscope. Information of a somewhat different nature is obtained by each method. In proctoscopic examination the surgeon is interested in determining several things, such as, first, the situation and extent of the lesion in relation to the number of centimeters of normal bowel distal to it, so that he may obtain necessary information as to the type of operative procedure advisable. Next, he wishes to ascertain the degree of obstruction, since this knowledge is important from the point of view of preparation of the patient. Third, he wishes to secure a specimen of tissue for biopsy, so that the grade of the lesion can be determined. Fourth, he seeks to learn the degree of mobility or fixation of the lesion, since this is important from the point of view of operability. This factor, however, finally must be determined at the time of surgical exploration.



Situation of the carcinomas of the large intestine of 817 patients, according to number of patients, percentage and site of occurrence within the designated structure or region. (There were 8 patients with multiple lesions.)

In addition to the 444 patients (54.3 per cent of all those who had carcinomas of the large intestine) who had lesions palpable on digital examination, all of which were visualized at proctosigmoidoscopic examination, 132 additional patients, or 16.2 per cent, had lesions of the lower bowel which were visible by sigmoidoscopic study. Thus a total of 576 patients (70.5 per cent of the total series of 817) had carcinomas of the large intestine which were within reach of the sigmoidoscope.

In this group of 132 patients with lesions which were not palpable on digital examination but were within reach of the sigmoidoscope, 34, or 25.8 per cent, had received treatment directed at some disease process other than the carcinoma, which had remained undiscovered. An analysis of this group of 34 patients showed that 28 patients had been treated either surgically or by some unknown procedure involving the anus. One had undergone fistulectomy, 3 had been treated for amebiasis and 2 had been treated for ulcerative colitis. Parenthetically, it might well be pointed out that amebiasis, like chronic ulcerative colitis, can coexist with carcinoma of the large intestine.

LESIONS DISCERNIBLE IN ROENTGENOGRAMS OF THE COLON

Of the patients who had lesions located higher in the colon, beyond the reach of the examining finger and the sigmoidoscope, 232 (28.4 per cent of the total series of 817) had carcinomas which were diagnosed by roentgenograms of the colon. Twenty-three patients, or 9.9 per cent, of this group had received other treatment during the period in which they were experiencing symptoms due to the carcinoma. Six had been operated on for hemorrhoids. Five had been treated for pernicious anemia by the intramuscular injection of liver extract. It is generally accepted that a secondary type of anemia is of common occurrence in the presence of malignant processes of the right portion of the colon. Five patients had been treated for colitis of some form; 2 had been treated for amebiasis and 2 had undergone appendectomy. In the last 2 cases the carcinoma had remained undiscovered, even though it was located in the cecal region. Polyps in the rectum had been diagnosed and treated in 3 patients, but carcinomas situated in a higher segment of the colon had not been discovered. It should be pointed out that the discovery of one polyp or more in the lower bowel ought to be an indication for examination of the rest of the colon by roentgen rays, with which the double contrast method is employed.

LESIONS ENCOUNTERED AT SURGICAL ABDOMINAL EXPLORATION

The remaining 9 (1.1 per cent of the total series of 817) of the 817 patients had lesions that had been diagnosed only at surgical abdominal exploration. In most instances in this group performance of emergency colostomy had been necessary because of obstruction of the large bowel, and the diagnosis had been made at the time of that operation. No significant treatment had been carried out for members of this group during the period in which they had experienced symptoms from carcinoma.

COMMENT

Paradoxic as it may seem, results of this study indicate that those patients who have carcinomas of the large intestine which can be diagnosed with the greatest ease—that is, by digital examination only—are more likely to be treated for some condition unrelated to the carcinoma. Of the 444 patients, or 54.3 per cent of the total of 817, who had lesions palpable on digital examination of the rectum, 102 (23 per cent of the 444), or 1 of every 4, had received some other treatment not directed at the carcinoma during the period in which they were experiencing symptoms from the unsuspected carcinoma. In comparison to this, of the 232 patients who had lesions located at a higher level in the large intestine 23, or 9.9 per cent of the 232, had been treated for some other disease, while none of the 13 patients who had carcinomas diagnosed at surgical abdominal exploration had received treatment for the lesion in question.

SUMMARY AND CONCLUSION

In the group studied, more than half (54.3 per cent) of all patients with carcinoma in any part of the large intestine had lesions which could be palpated by digital examination of the rectum. About a fourth (23 per cent) of the patients in this group had received some form of treatment for disease of the colon or rectum, but not for carcinoma, during the course of their symptoms arising from the unsuspected carcinoma that was within reach of the examining finger.

An additional 16.2 per cent of all the patients who had carcinomas anywhere in the large intestine had lesions which were within reach of the sigmoidoscope. A fourth (25.8 per cent) of this group had received treatment for some disease other than the carcinoma, which had remained undiscovered.

Patients who had carcinomas of the large intestine that were beyond the reach of the examining finger and sigmoidoscope constituted the remaining 29.5 per cent of the total series of 817. Of this group, 28.4 per cent had carcinomas that were diagnosed by roentgenologic studies of the colon, and 1.1 per cent had lesions that were discovered at abdominal surgical exploration. In this group, during the period of symptoms from carcinoma, only 9.9 per cent of the patients had received treatment directed toward any other condition.

CLINICAL EVALUATION OF VASCULAR DAMAGE IN DIABETES MELLITUS

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New York

The discovery of insulin twenty-five years ago served to avert the catastrophic threat to life represented by diabetes mellitus but unfortunately initiated an attitude of complacency in the members of the medical profession. What was intended as a palliative became the panacea; control of the blood sugar level was interpreted as control of the disease. But "maintenance of life is not sufficient in itself as a goal in the treatment of diabetes mellitus."[1] The optimism of that early period is now being dissipated by a number of anxious reports[2] on the mounting incidence of seemingly inevitable degenerative sequelae. Rosenbusch[3] has concluded a painstakingly thorough study of 88 diabetic children with the following: "The prognosis of diabetes in childhood—taking a long view—is in spite of the progress of dietary and insulin treatment more adverse than had originally been expected." Joslin[4] has found evidence of vascular damage in 70 per cent of 250 juvenile patients despite twenty years of treatment. Wagener's[5] most recent survey from the Mayo Clinic recognizes the seriousness of "the steadily increasing frequency of retinopathy, especially in the younger age groups."

A unique association of diabetes with vascular damage in various organs was described as a pathologic and clinical entity by Kimmelstiel and Wilson[6] and termed "intercapillary glomerulosclerosis." Subsequent reports[7] have stressed the terminal nature of this syndrome, with its clinical aspect limited to the triad of hypertension, retinopathy and albuminuria. Failure to study the pathogenesis of this condition stands in decided contrast to the pathologist's zeal in ferreting out the characteristic glomerular lesion with increasing[8] frequency among diabetic persons. It is the purpose of this paper to demonstrate that this syndrome exists with varying expressions of severity in every instance of diabetes mellitus of some duration.

MATERIAL

Two hundred patients in whom the onset of diabetes occurred before the age of 50, either in childhood, adolescence or adulthood, were the subjects of this study. Fifty-five were juvenile patients in whom the diabetic condition began before the age of 20. These patients formed a special group, which will be discussed in greater detail than the others. The infrequency of significant vascular damage in nondiabetic persons of this age obviated the need for a comparison group. The patients were selected from the metabolism clinic of Mount Sinai Hospital and private practice on the basis of detailed medical records dating from the onset of diabetes, with emphasis on regular ophthalmoscopic examinations, determinations of blood pressure and complete urinalyses. These procedures were performed on each visit to the physician, month after month and year after year, so that a picture of the evolution of abnormal observations was obtained. Consequently the results are not comparable with those of many investigations[9] based on single or "spot analyses" of similar patients. No mydriatics were used for ophthalmoscopy; careful scrutiny of the retina through the undilated pupil proved surprisingly successful and permitted unprotested repetition of this examination on each visit. "The earliest and the most characteristically diagnostic and therefore possibly the basic lesion is the small punctate hemorrhage in the presence of ophthalmoscopically normal retinal vessels."[5] Elevation of the diastolic blood pressure above 90 mm. of mercury was considered evidence of hypertension in the case of juvenile patients; for adults 100 mm. was taken as the critical reading. Albuminuria was so constantly associated with cylindruria that the former term will be used in this inclusive sense throughout the paper.

DIABETIC CONTROL

The 55 juvenile patients included 19 whose diabetes began before the tenth year. (One patient in this group had had diabetes since the age of 11 months.) There have been 7 fatalities among the 55; 3 with intercapillary glomerulosclerosis, 2 cerebral accidents without hypertension and 2 postoperatively of unknown causes. These 7 will be the subject of a future report.

The accepted dictum that "control" of glycosuria influences the development of degenerative change served as the basis for the analysis presented in table 1. The treatment of 20 young diabetic patients satisfied all orthodox criteria for excellent diabetic control, namely, adherence to moderate carbohydrate, low fat

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From the Metabolism Service of Mount Sinai Hospital.

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[3] Rosenbusch, H.: Prognose und Spätkomplikationen des Diabetes Mellitus im Kindesalter, Basel, S. Karger, 1945, p. 78.

[4] Joslin, E. P.: Insulin's Twenty-Fifth Anniversary, Diabetes Abst. **5**:37 (April) 1946.

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[7] (*a*) Newburger, R. A., and Peters, J. P.: Intercapillary Glomerulosclerosis: A Syndrome of Diabetes, Hypertension and Albuminuria, Arch. Int. Med. **64**:1252 (Dec.) 1939. (*b*) Siegel, S., and Allen, A. C.: Intercapillary Glomerulosclerosis (Kimmelstiel-Wilson) and the Nephrotic Syndrome in Diabetes Mellitus, Am. J. M. Sc. **201**:516 (April) 1941.

[8] Laipply, T. C.; Eitzen, O., and Dutra, F. R.: Intercapillary Glomerulosclerosis, Arch. Int. Med. **74**:354 (Nov.) 1944.

[9] Hanum, S.: Diabetic Retinitis, Acta ophth., 1939, supp. 16, p. 3.

diets and exhibition of little or no glycosuria. Within a range of six to twenty-two years' duration, retinal hemorrhages were noted in all, with an average duration of diabetes of thirteen years when the earliest lesions were observed. By the time retinopathy had developed 50 per cent of patients presented definite hypertension and 30 per cent albuminuria. The first patient to receive insulin at Mount Sinai Hospital was a girl 9 years of age. The control of her disease has always been considered perfect. For the past ten years she has never presented a single instance of glycosuria on a diet of carbohydrate 150 Gm., protein 80 Gm. and fat 80 Gm., with a fixed dose of 60 units of protamine zinc insulin. Twenty-two years after the onset of diabetes numerous retinal hemorrhages were observed along with albuminuria and a blood pressure of 150 systolic and 100 diastolic.

A parallel group of 18 patients in whom only a fair degree of diabetic control could be obtained presented retinal hemorrhages within five to twenty years after onset, the average duration of diabetes for the group being 10.4 years. At this time one third of the 18 patients displayed hypertension and albuminuria.

A third group of 17 patients had been categorized as having an unusually severe brittle form of diabetes in which glycosuria and hyperglycemia defied all therapeutic measures. The regimentation of diet evoked such resistance in many of these children and produced such pronounced psychic trauma [10] that *faute de mieux* a free diet was condoned. In recent years these patients were even encouraged to continue this regimen as more and more divergence of opinion appeared on the subject of the ideal diet. Lichtenstein [11] summarized the conflict among the proponents of various dietary manipulations in the following: "If any valid scientific grounds for the superiority of a certain form of diet had existed, this diet would doubtless have soon superseded all the others." The incidence of retinal hemorrhage was noted between five to nineteen years after the onset of diabetes, an average group span of 12.4 years. Hypertension accompanied this finding in 40 per cent of patients and albuminuria in 64 per cent with both usually occurring in the same patients.

TABLE 1.—*Relation of Diabetic Control to Vascular Damage in Fifty-Five Juvenile Patients*

		Onset of Retinal Hemorrhage				
Diabetic Control	No. of Patients	Average Duration of Diabetes, Yrs.	Patients with Hypertension	Patients with Albuminuria	Patients with Vascular Calcification	Patients Subsequently Blind
Excellent	20	13.0	10	6	2	1
Fair	18	10.4	6	7	2	2
Poor	17	12.4	7	11	2	2

The course of the perfectly controlled diabetic girl previously described may be contrasted with that of one of her contemporaries, a boy whose diabetes began in 1926 when he was 4 years of age. He has been on an unrestricted diet for twenty years. When he was but 5 years of age his physician, Dr. A. E. Fischer, admitted that there was "no use pretending to keep this child on a calculated diet." There has been a daily carbohydrate intake of over 400 Gm. plus large quantities of sugar-inducing, continuous glycosuria (60 to 100 Gm.) without a single episode of ketosis in all these years. For the past ten years the dosage of 80 units of protamine zinc insulin has not required alteration. Despite this gross violation of orthodox therapeutic procedure the earliest vascular damage did not appear until nineteen years after the onset of diabetes. At this time several retinal hemorrhages were noted in association with mild albuminuria and a blood pressure of 140 systolic and 100 diastolic. Within almost the same period these 2 patients exemplifying the extremes of diabetic therapy arrived at the same stage of degeneration.

TABLE 2.—*Relation of Age of Onset of Diabetes to Vascular Damage in Two Hundred Patients*

		Onset of Retinal Hemorrhage					
			Patients with Hypertension		Patients with Albuminuria		
Age of Onset of Diabetes	No. of Patients	Average Duration of Diabetes, Yrs.	No.	%	No.	%	Patients Subsequently Blind
0-19	55	13.0	27	49.1	24	43.6	5
20-29	21	13.3	9	42.9	10	47.6	3
30-39	45	13.0	21	46.7	23	51.1	6
40-49	79	10.0	37	46.8	48	60.8	13
Total	200		94		105		27

Table 1 indicates the limitations in the use of the x-ray as a means of estimating early vascular damage. It is noteworthy that when retinal lesions had occurred in 100 per cent of the juvenile patients, and hypertension and albuminuria in 40 per cent, the roentgenologic survey lagged behind with a positive corroboration in only 11 per cent.

SIGNIFICANCE OF AGE

The relation of the age of onset of diabetes to the development of vascular lesions in the entire group of 200 patients is presented in table 2. A remarkable parallelism in observations is evident between the juvenile patients and the young diabetic adults in whom the onset of the disease occurred two decades later, namely, at age 20 to 39. In the group aged 20 to 29 the appearance of retinal hemorrhage was noted between four to twenty-two years after the onset of diabetes, with the average duration for the group of 13.3 years. In the group aged 30 to 39 retinopathy appeared between three to twenty-four years after onset, the average duration of diabetes being thirteen years for the group. The patients of these two decades presented almost identical association of hypertension and albuminuria in about 50 per cent of cases.

TABLE 3.—*The Development of Retinopathy in Relation to the Use of Insulin*

Age of Onset of Diabetes	Treatment	No. of Patients	Aver. Duration of Diabetes at Earliest Retinopathy, Yrs.	Subsequent Progression to Blindness
30-39	Diet alone	12	12.0	3
	Insulin	33	13.5	3
	Total	45	13.0	6
40-49	Diet alone	17	8.3	6
	Insulin	62	10.5	7
	Total	79	10.0	13

The oldest group (onset at 40 to 49 years of age) presented evidence of accelerated vascular degeneration with the earlier appearance of all the abnormal findings with even greater frequency. The retinal lesions were noted between zero to twenty years after the onset of the disease, the average duration being ten years. Several patients showed advanced visual failure even before the classic symptoms of diabetes appeared. The apparent tendency toward the earlier development of retinopathy in the mild (noninsulin) cases (table 3) was due to the inability to estimate the duration of diabetes in cases in which the onset was clinically undramatic. "Duration of the diabetes is a much more important factor than is the age of the patient." [5] The glycosuria of patients in the three older groups was well controlled by insulin and diet or by diet alone.

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[10] Fischer, A. E., and Dolger, H.: Behavior Psychologic Problems of Young Diabetic Patients: A Ten to Twenty Year Survey, Arch. Int. Med. **78**: 711 (Dec.) 1946.

[11] Lichtenstein, A.: Treatment of Children's Diabetes: Ten Years' Experience Without Dietetic Restrictions, Acta pædiat. **32**: 556, 1945.

THE COURSE OF RETINOPATHY

The appearance of retinal hemorrhage often presaged the inevitable pattern of more generalized and progressive vascular degeneration. The rate of progression had no relation to the severity of diabetes or its control. The hemorrhages often resorbed spontaneously, thereby making the effect of any specific therapeutic measures difficult to evaluate. The persistent recurrence of small hemorrhages often escaped notice by the patient or physician because of the lack of appreciable interference with vision. On the other hand, without apparent reason, the sudden appearance of retinal hemorrhages not infrequently progressed to blindness within a year. This disaster occurred when retinitis proliferans developed with subsequent retinal detachment, massive vitreous hemorrhage and secondary glaucoma.

Twenty-seven patients of the total group of 200 became partially or totally blind (table 2). This shocking sequel to retinopathy was found in 5 of the juvenile patients. The duration of diabetes in these cases was fourteen years in 2 instances and sixteen, nineteen and twenty-four years in the others. Table 1 indicates that the control of glycosuria failed to prevent this tragedy. These 5 patients presented the triad of the originally described syndrome of hypertension, albuminuria and nephrotic edema.

OTHER DEGENERATIVE CHANGES

All the blind patients had albuminuria of varying severity; hypertension, however, was found in only 60 per cent. Evidences of vascular myelopathy were found in every instance of blindness. There were 3 patients with cord bladder symptoms and 4 with interosseous atrophy resembling amyotrophic lateral sclerosis. The majority of blind patients showed trophic changes of the skin, especially in the lower extremities.

COMMENT

The most significant deduction to be drawn from this study is that the duration of diabetes mellitus rather than the method of treatment is the most important factor in the development of degenerative changes. "It makes little difference how the diabetic is treated; if he lives long enough, he will develop one or another form of vascular disease." [12] This has been corroborated experimentally by Lukens and Dohan [13] in the observation of a lesion resembling that of intercapillary glomerulosclerosis in the first animal with pituitary diabetes to survive a period of five years. In 1930 Warren [14] claimed never to have seen an autopsy of "a diabetic whose disease lasted five years or more, free from arteriosclerosis, regardless of age." Eight years later he amended that statement, having found but 4 cases without this vascular damage. Priscilla White [15] admits "the incidence of degenerative complications in juvenile diabetes far exceeds expectation. . . . arteriosclerosis appears inevitable." Although in agreement with Lichtenstein's [11] free diet, I am constrained to point out the inadequacy of a mere ten years' observation as the basis for his claim of diabetic complications in "remarkably small degree." Wagener [5] emphasized the element of duration in finding an incidence of retinopathy in 76 per cent of patients under 30 years of age who had had diabetes for more than ten years.

The more obvious carbohydrate disturbance of what is commonly termed diabetes mellitus has overshadowed the generalized nature of the disease, the etiology of which is still unknown. The concept of vascular damage as a complication of diabetes must be amended in the light of all current observations; it is to be recognized rather as an integral manifestation of the basic disorder, an "associated concomitant of the disease." [16] Such a biologic approach to this problem was postulated by Dry and Hines [17] on the basis of "an inherent weakness . . . which affects both the insulin-producing tissues and the vascular system" with a common mechanism for the production of arteriosclerosis, retinopathy and neuropathy on the basis of involvement of the nutrient vessels to these structures. The diabetic patient provides unique material for the study of the phenomena of aging and associated degenerative diseases since it has been demonstrated that diabetes represents an acceleration of these processes.

CONCLUSION

1. Within a period of twenty-five years' duration of diabetes mellitus not 1 of 200 regularly examined patients escaped retinal hemorrhage, regardless of age of onset, severity of diabetes or type of treatment used.

2. Retinopathy usually presaged progressive vascular degeneration. Fifty per cent of patients exhibited hypertension and albuminuria at the time of earliest retinal hemorrhage.

3. Present day treatment of diabetes has failed to avert the accelerated vascular damage, which is an associated phenomenon of the disease and not a complication.

1049 Park Avenue.

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[12] Mirsky, I. A.: Our Challenge for the Future, Diabetes Abst. **5**: 71 (July) 1946.

[13] Lukens, F. D. W., and Dohan, F. C.: Experimental Pituitary Diabetes of Five Years' Duration with Glomerulosclerosis, Arch. Path. **41**: 19 (Jan.) 1946.

[14] Warren, S.: The Pathology of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1938, p. 121.

[15] White, P.: Diabetes in Youth, New England J. Med. **224**: 586 (April 3) 1941.

[16] Mirsky, I. A.: Some Considerations of the Etiology of Diabetes Mellitus in Man, Proc. Am. Diabetes A. **5**: 119, 1945. Mirsky.[12]

[17] Dry, T. J., and Hines, E. A., Jr.: The Role of Diabetes in the Development of Degenerative Vascular Disease, with Special Reference to the Incidence of Retinitis and Peripheral Neuritis, Ann. Int. Med. **14**: 1893 (April) 1941.

Venous Catheterization of the Heart.—Werner Forssman was the first to pass a catheter into the heart of a living patient, doing it first on himself with the help of a surgical colleague who made the incision over the median basilic vein in the antecubital space. Cournand and Ranges and their associates have used the method more than any group in this country, largely in the study of cardiovascular dynamics, particularly in shock. Their report in 1941 stimulated others to use the venous catheter, and at present a considerable literature has accumulated on the subject. Cournand reported 1,200 such examinations with no fatalities and no serious complications from the passage of the catheter. However, we know of one death in another institution following the injection of diodrast through the catheter in a patient who had been injected with the same medium ten days before.—Sosman, Merrill C.: Venous Catheterization of the Heart, *Radiology,* May 1947.

POTASSIUM DEFICIENCY IN DIABETIC ACIDOSIS

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and
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Acidosis presents the most dramatic and dangerous of all the complications of diabetes mellitus. That the therapy in diabetic acidosis is unsatisfactory is shown not only in the mortality tables, but in the disagreements that arise whenever the subject is discussed. It is generally conceded that insulin is the prime need. Next in importance is correction of the disturbed water and electrolyte metabolism consequent to insulin deficiency.

Since 1936 the following plan of therapy has been used on all adult patients admitted to Duke Hospital with diabetic acidosis. When the diagnosis was made, blood was drawn for analysis and 50 units of unmodified insulin was given. This amount was repeated every half hour until the blood sugar level approached normal. On the ward gastric lavage and an enema were given, and external heat was applied. Subcutaneous and intravenous infusions of isotonic solution of sodium chloride were started and allowed to run at a rate of 750 to 1,000 cc. per hour. When the blood sugar level was decidedly reduced, a 10 per cent solution of dextrose was given intravenously. Sixty-seven per cent of the patients received sodium lactate solution along with the isotonic solution of sodium chloride.

Recently, Holler [1] reported a patient whose course resembled that of some observed in this clinic. There was a history of failure to take insulin for several days, resulting in acidosis and coma. On admission to the hospital, adequate therapy was given and improvement was prompt, only to be followed in several hours by generalized weakness and respiratory difficulty. The clinical syndrome of potassium deficiency was recognized, and the administration of potassium chloride was followed by dramatic improvement. In the light of this report, detailed study of 2 cases and a review of the data on all diabetic persons admitted here in a state of acidosis are presented.

REPORT OF CASES

CASE 1.—A white woman aged 28 was admitted in February 1939. She was known to have diabetes of six months' duration, and she had taken insulin in a haphazard manner. She had received no insulin for six days prior to admission, and two days before there had developed abdominal pain, nausea and vomiting. About eighteen hours before admission she became stuporous and could hardly be roused; for fourteen hours she had been comatose.

Physical examination disclosed that the blood pressure was 140 systolic and 92 diastolic, and the temperature 36.5 C. (97.7 F.). Characteristic Kussmaul respiration was present, and the odor of acetone was on her breath. Her skin was dry, cool and inelastic; the eyeballs were soft. The remainder of the physical examination was noncontributory.

Blood sugar determinations and the serum carbon dioxide combining power and potassium concentration were followed throughout her stay in the hospital.

After two hours of the usual treatment the patient began to rouse, and after eight hours she appeared quite well. About twelve hours later she began to complain of difficulty in breathing; this did not manifest itself objectively. The plasma carbon dioxide combining power was 40 volumes per cent and the blood sugar level was 84 mg. per hundred cubic centimeters. The patient complained of difficulty in swallowing, which progressed to inability to take anything by mouth, and respiration gradually became more rapid and shallow. Repeated physical examinations revealed nothing beyond an extreme degree of weakness of all muscles; the patient remained alert. Nikethamide was given frequently with no helpful effect. The blood sugar and serum carbon dioxide combining power had been approximately normal for twelve hours, and the urine had been free of sugar and acetone for twenty-four hours. The patient died in collapse thirty-seven hours after admission. No autopsy was obtained.

During the first twenty-four hours in the hospital she received by intravenous infusion 9,000 cc. of isotonic solution of sodium chloride. Dextrose was not given until after thirty hours, when the patient was already having respiratory distress.

As shown in chart 1, there was a progressive decrease in the serum potassium concentration, so that six and one-half hours before death it had reached 2.4 milliequivalents per liter (determined by the method of Kramer and Tisdal [2]).

CASE 2.—A white woman aged 60 was admitted in September 1946. This patient was the first person with diabetic acidosis admitted to Duke Hospital since the appearance of Holler's report. Six days before admission her insulin syringe was broken, and in order to punish her family for neglecting her she made no effort to replace it. She complained of abdominal pain and vomiting for three days before admission, and twelve hours before arrival she was found in deep coma.

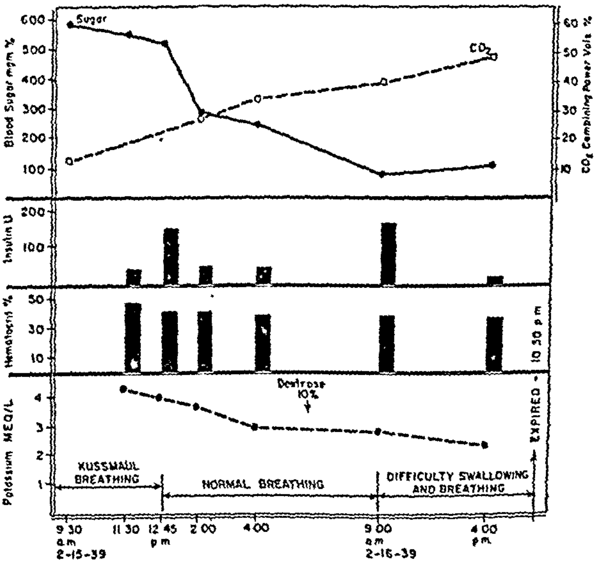

Chart 1 (case 1).—Results of laboratory tests showing decrease in the serum potassium concentration.

Physical examination disclosed the temperature was 37 C. (98.6 F.) and the blood pressure 80 systolic and 50 diastolic. Respirations were of the Kussmaul type. There were signs of extreme dehydration and an odor of acetone on her breath. She did not respond to painful stimuli. The remainder of the examination revealed essentially normal conditions.

The urine showed a strong reaction for sugar, acetone and diacetic acid. The blood sugar level and the serum carbon dioxide combining power are shown in chart 2.

Six hours after admission the patient roused; her respiratory rate was normal and she appeared much improved. At eight hours her blood sugar level was 324 mg. per hundred cubic centimeters, her carbon dioxide combining power was 34 volumes per cent and urinalysis showed traces of sugar and acetone with no diacetic acid. One hour later her respirations became shallow, rapid and obviously difficult. She received a 10 per cent solution of dextrose intravenously, with further impairment

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From the Department of Medicine, Duke University School of Medicine, and Duke Hospital.

[1] Holler, J. W.: Potassium Deficiency During the Treatment of Diabetic Acidosis, J. A. M. A. **131:** 1186 (Aug. 10) 1946.

[2] Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry: Methods, Baltimore, Williams & Wilkins Company, 1932, vol. 2.

of respiration. She was then given 0.6 Gm. of potassium chloride by mouth every half hour until 3.6 Gm. had been given. Within two hours her respirations were normal and subjectively she was greatly improved. The patient made an uneventful recovery.

The serum potassium concentration shown in chart 2 was determined in a flame photometer by the method of Barnes and associates.[3] The lowest concentration was 1.9 milliequivalents per liter, and at this time the patient was in respiratory distress. It must be pointed out that though the respiratory difficulty was present before the patient received dextrose, it became more pronounced afterward.

Table 1.—*Data on Diabetic Acidosis*

	Total Cases			Total Cases Less Deaths from Other Causes		
Mental State	Cases	Deaths	% Mortality	Cases	Deaths	% Mortality
Conscious	11	0	0	11	0	0
Drowsy	28	0	0	28	0	0
Semicomatose	42	9	21.4	37	1	2.7
Comatose	55	30	54.6	43	21	48.8
Totals	136	39	28.9	119	22	18.5
Hours in Coma						
12	102	18	17.7	92	8	8.7
12 to 23	21	12	57.2	18	9	50.0
24	13	9	69.2	9	5	55.6
Totals	136	39	28.9	119	22	18.5

From its opening in 1930 to Jan. 1, 1946, 136 patients in diabetic acidosis have been admitted to Duke Hospital (table 1). Of the 39 who died, 17 had other disease that was the probable cause of death (table 2). When these are eliminated, the mortality rate for the remaining 119 patients is 18.5 per cent. This rate is much higher than any reported in recent years from other clinics. Only one recent report,[4] however, comes from a general hospital which draws its patients from rural communities where hospitalization is not immediately available.

Table 2.—*Causes of Death Other Than Diabetic Acidosis*

Pneumonia, lobar	5
Uremia	4
Septicemia	3
Renal abscesses	1
Carcinoma of cervix, radiation necrosis of bladder	1
Meningitis due to Hemophilus influenzae	1
Pelvic infection (septic course)	2
Total	17

The cause of death was determined clinically in 5 cases and by autopsy in 12

It has been shown by many observers[5] that neither the concentration of dextrose in the blood nor the serum carbon dioxide combining power has any relation with either the degree of acidosis or the mortality rate. We likewise could find no such relation, and these data are therefore not presented. It should be stated, however, that those patients who had been in coma longest exhibited a tendency to have higher concentrations of dextrose and lower carbon dioxide combining power.

The mortality rate in those patients who received sixth-molar solution of sodium lactate was lower than in those who received none (table 3). However, analysis reveals that these figures are not significant statistically.

We have defined the mental state of the patients as follows: Conscious, as the mental state of the patient who is fairly alert; drowsy, the patient who can be aroused by calling or by painless stimulation; semicomatose, one who can be aroused by painful stimulation, and comatose, one who cannot be aroused. Realizing the difficulty and in many instances the impossibility of estimating the length of time that a patient has been in a state of acidosis, we have, for uniformity, classified the patients in three groups according to time. In the first group, those less than twelve hours in coma, are included all patients who were conscious, drowsy, semicomatose and those who had been comatose for less than twelve hours. In the second group are those who were comatose for more than twelve hours and less than twenty-four, while in the third group are those who were comatose for twenty-four hours or longer. In our series the length of time in coma and the mental state were the factors of most prognostic value (table 1).

Table 3.—*Comparison of Mortality Rates With and Without Sodium Lactate Therapy*

	Sodium Lactate			No Sodium Lactate		
Hours in Coma	No. of Patients	Deaths	% Mortality	No. of Patients	Deaths	% Mortality
12	59	5	8.5	33	3	9.1
12 to 24	9	7	66.6	9	2	22.2
24	6	3	50.0	3	2	66.6

Among the persons who died from diabetic coma, there were 5 who ante mortem had normal blood sugar and serum carbon dioxide combining power and who showed no lesions at autopsy (table 4). In each of these cases it was noted that the patient had labored respirations, with or without difficulty in swallowing, and died in collapse. No potassium determinations were done in these cases. It can be conjectured that these patients, just as those whose history is given in detail, had abnormally low concentrations of serum potassium.

Table 4.—*Laboratory Data in Five Fatal Cases of Diabetic Acidosis*

Patients who died with normal values for carbon dioxide combining power and blood sugar. Autopsy showed no lesions.

History No.	Death, Hours After Admission	CO_2 Combining Power, Vol. %	Blood Sugar, Mg./100 Cc.
23260	72	77	140
A-21065	14	50	170
A-62406	16	59	243
A-98866	14	53	141
B-20428	24	73	96

COMMENT

Smith[6] has reported that in dogs who are fed a diet that is low in potassium, paralysis of various muscle groups will result and, unless therapy is started, death in a state of collapse will occur. The administration of biotin will temporarily relieve these dogs, but potassium is necessary before any permanent improvement is noted. Furthermore, the serum potassium concentration is low. It is well recognized that in familial periodic paralysis the concentration of potassium in the serum is low, and that to prevent or to relieve an attack potassium is needed. We believe that the severe muscular weakness that we have seen in patients who apparently have recovered from diabetic acidosis is the result of potassium deficiency.

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[4] Hagtvet, J.: Diabetic Coma, Acta med. Scandinav. **114:** 168, 1943.

[5] Joslin, E. P.; Root, H. F.; White, P., and Marble, A.: Diabetic Coma, J. A. M. A. **119:** 1160 (Aug. 8) 1942. Root, H. F.: The Use and Abuse of Glucose in the Treatment of Diabetic Coma, ibid. **127:** 557 (March 10) 1945; correction, ibid. **127:** 1068 (April 21) 1945. Collen, M. F.: Mortality in Diabetic Coma, Arch. Int. Med. **70:** 347 (Sept.) 1942. Rabinowitch, I. M.; Fowler, A. F., and Bensley, E. H.: Diabetic Coma: Investigation of Mortalities and Report of Severity Index for Comparative Study, Ann. Int. Med. **12:** 1403, 1939.

Several factors may combine to produce the reduction in the serum potassium concentration as noted in the cases reported here: (1) loss of potassium by diuresis and dehydration with resultant loss of intracellular stores of water and potassium; (2) loss of potassium as a result of the effect of insulin, and (3) reduction of serum concentration due to dilution by parenteral fluid with no outside source of potassium.

In careful balance studies on 2 diabetic subjects, Atchley and associates[7] demonstrated that during the period of insulin withdrawal there was an increase in t e excretion of potassium in the urine and that during the recovery phase the excretion of potassium was decidedly reduced. In our case 1 it was observed that 3.6 milliequivalents per liter of potassium were excreted during the first twelve hours. Unfortunately the excretion of potassium in case 2 could not be determined because the patient, who insisted on removing the catheter, was incontinent. In the 2 patients reported by Atchley, no great reduction of the serum potassium concentration at the beginning of the recovery period was found. No further determinations of the serum potassium were made until the end of the recovery period.

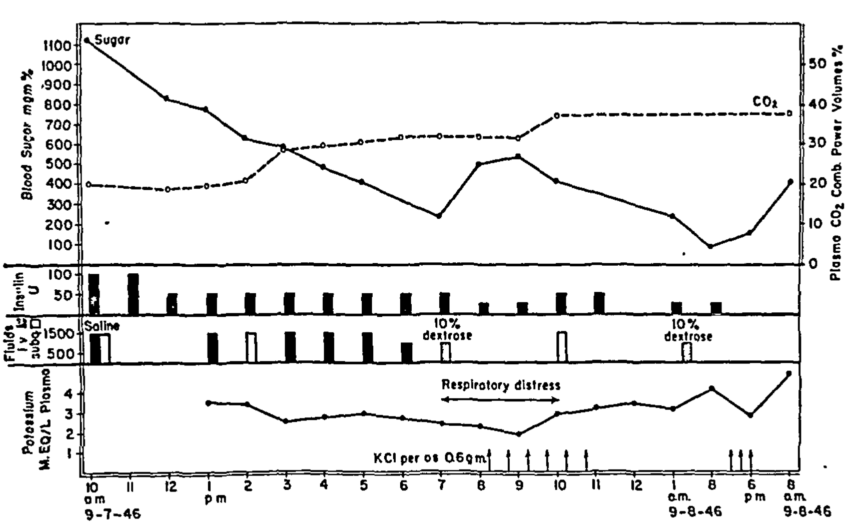

Chart 2 (case 2).—Laboratory data.

Elkinton and Winkler[8] have reported that in dehydration or diuresis not due to diabetic acidosis, loss of potassium in the urine takes place. They expressed the belief that there is also loss of intracellular water and potassium.

Harrop and Benedict[9] reported in 1923 that in patients with diabetes mellitus an injection of insulin produced a decrease of the serum potassium concentration. Briggs and associates[10] and Kerr[11] have shown that in normal dogs the administration of insulin produced a decrease in the concentration of potassium in the serum. Further evidence that insulin reduces the serum potassium has been shown by Aitken and associates in patients with familial periodic paralysis.[12]

In reconstructing the events that took place in the 2 cases reported here, it is apparent that there was a loss of potassium along with water, sodium and chloride, during the period in which the patients received no insulin. In addition to the loss of inorganic base and chloride due to diuresis, a considerable amount was lost in vomitus. After admission to the hospital, insulin and isotonic solution of sodium chloride in large amounts were administered. Further loss of potassium must have taken place at that time along with further decrease in the concentration because of dilution. This is partially confirmed by the fact that there was a steady and continued lowering of the serum potassium concentration while the patients were in the hospital. In case 1 the concentration had fallen to a critical level of 2.4 milliequivalents per liter six hours before death. Unfortunately, the significance of this deficiency was not recognized. In case 2 the serum potassium concentration fell to 1.9 milliequivalents per liter. Actually, enteric-coated potassium chloride by mouth had been given forty-five minutes before the serum was drawn for this determination. The drug had not been absorbed in quantities sufficient to be reflected in the serum at the time that the determination was made. Three hours after potassium chloride had been given to the patient the respiratory distress was completely relieved.

We believe that the potassium deficiency reported by Holler[1] and noted in 2 cases reported here is one of the factors responsible for the high mortality rate in cases of diabetic acidosis at this clinic. It appears that a longer time in coma allows more potassium to be lost from the intracellular stores and from the serum.

SUMMARY

1. Two cases of diabetic acidosis associated with a decrease in the serum potassium concentration are reported.

2. A review of data on patients admitted to Duke Hospital in diabetic acidosis reveals a mortality rate of 18.5 per cent, excluding deaths probably due to other causes.

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[6] Smith, S. G.: Potassium vs. Biotin in the Treatment of Progressive Paralysis in Dogs, to be published.

[7] Atchley, D. W.; Loeb, R. F.; Dickinson, W. R., Jr.; Benedict, E. M., and Driscoll, M. E.: On Diabetic Acidosis: Detailed Study of Electrolyte Balances Following Withdrawal and Reestablishment of Insulin Therapy, J. Cl[illegible] 1933.

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COMPOSITE FREE GRAFTS OF SKIN AND CARTILAGE FROM THE EAR

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St. Louis

LIEUTENANT COLONEL BRADFORD CANNON, M. C., A. U. S.
Boston

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Composite free grafts from the ear, comprising two surfaces of skin with cartilage between, have proved increasingly useful in the replacement of tissue lost from the nasal tip, nostril borders and columella. The use of a free transplant has made possible repairs in a single procedure with minimal resultant deformity of the ear. Thus, the risk of altering a normal feature in shifting a local flap or the need of multiple procedures in moving a distant flap have been eliminated in correcting these deformities.

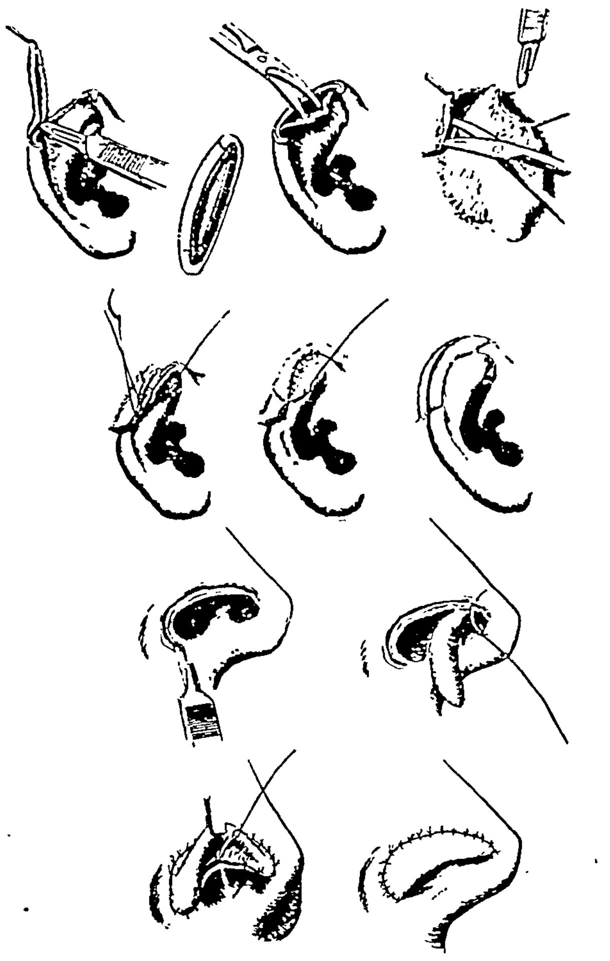

Fig. 1.—Steps in the repair of the nostril border with composite free grafts of skin and cartilage from the ear.

Losses from gunshot wounds, burns, injuries and surgical excision are all correctible by this method, but it is doubtful whether grafts over 1 cm. in width can be successfully transplanted. Since the length of the graft is not limited, the columella, tip and one ala can be restored with a single graft, which reproduces almost perfectly the normal curve at the apex of the nostril. To correct a short ala, the alar scar can be opened and a wedge shaped graft inserted; or a constricted nostril due to a burn can be opened by excision of the scar and repaired with a composite graft. A plaque of skin and cartilage is useful in losses at the tip, but an adequate overlap of skin must be left, since the blood supply develops from the margins, not through the cartilage. Adequate minute blood supply with as much well-vascularized surface as possible available for contact between the nose and the graft is necessary in preparation of the defect for the graft. The removal of all marginal scars will necessarily enlarge the defect but is important to insure an ample supply of blood. Any recent trauma or surgical procedure, such as resurfacing of the dorsum with a free skin graft, is sufficient reason to delay the use of the composite graft until all reaction has subsided.

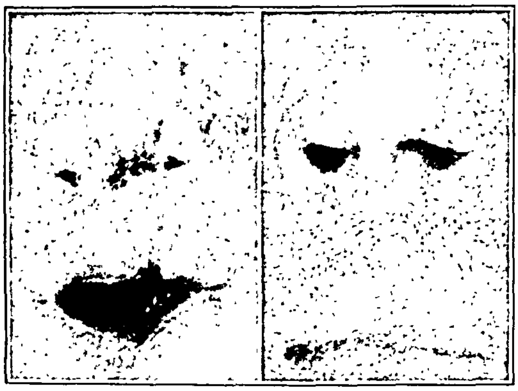

Fig. 2.—Restoration of columella, tip and ala in a single operation with composite free graft. Notching of upper and lower lips has been corrected.

A pattern of the final defect in the nose is helpful in selecting a suitable part of the ear for the donor area and important in accurate measurement of the graft. Portions of the normal ear with thin skin over the cartilage are best, but even a partially damaged ear may have enough suitable margin remaining for a large composite graft. The repair of the ear then is merely postponed until it can be combined with the nostril repair. If a long or wide graft is necessary, as in columellar-alar repairs, the rim of the helix is the only

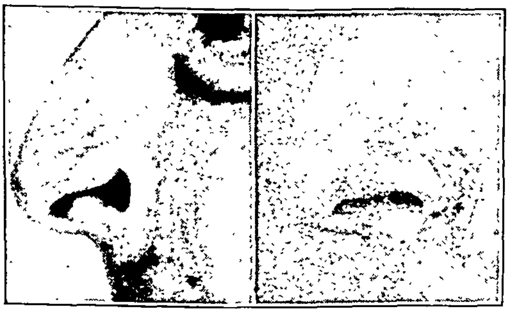

Fig. 3.—Restoration of margin and base of ala in a single operation with composite free graft.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 4, 1946.

This work has been done at Valley Forge General Hospital in association with Major Parke Scarborough, Major Edwin Shearburn, Captain Andrew Moore, Captain Joseph Murray, Lieut. Allyn McDowell and Lieut. Milton Edgerton.

possible source. Smaller grafts may be taken from the crus of the helix and flat grafts from the antihelix or rim of the concha. Separation of cartilage from skin in handling the grafts should be avoided.

Repair of the ear is performed by several methods. Larger excisions require repair with a scalp flap in which the open ear margin is buried. The pedicle is severed and the defect behind the ear grafted two or three weeks later. Smaller excisions can be repaired by direct closure or by a local flap or graft. The resultant deformities are not apparent.

The graft itself is accurately sewed in place usually with a few buried stitches for anchorage and fine stitches for skin approximation. In dressing the graft, adequate immobilization is secured by packing the nostrils and applying gentle but firm resilient pressure externally with an aluminum splint. Occasionally the grafts become discolored and even blister, but it has been observed that they generally recover, if carefully tended.

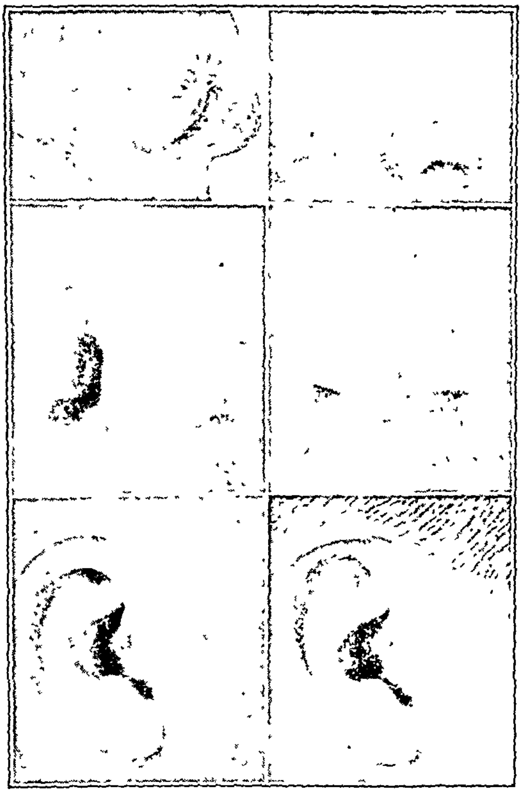

Fig. 4.—Large replacement of nostril defect by use of free composite graft of skin and cartilage in a single operation. Minimal deformity of ear with scalp flap.

SUMMARY

Composite free grafts of skin and cartilage from the ear have proved useful in correcting alar border, tip and columellar defects. Satisfactory repairs can be carried out in a single procedure by this method.

ABSTRACT OF DISCUSSION

Dr. William S. Kiskadden, Los Angeles: Those engaged in plastic surgery are constantly being asked what is new and what advances have been made. The case reports by Dr. Brown and Colonel Cannon represent something really new. Yet when one considers actually what has been presented it is seen that they have used only well known principles which have escaped the rest of us down through the years. They have used their own ingenuity, their technic and their imaginative surgical skill to great advantage. The war, of course, lent its aid in giving them a volume of cases in which, though 1 failure might have deterred them, they could proceed to a series as great as has been reported. There are other methods, of course, whereby repairs of this sort may be accomplished, but none, I think, that lend themselves as satisfactorily as this. Recently Dupurtuis, of Pittsburgh, brought out a procedure quite similar in technic wherein he utilized the lobe of the ear. Here again the matching of the tissue was comparable to the matching that was obtained by Dr. Brown and Colonel Cannon. The advantage is that the lobe can be simply and easily repaired. Another method offers itself. It entails additional operative procedures, but occasionally with advanced scarring and an inadequate blood supply, possibly secondary to a rather severe burn, possibly secondary to the bringing down of a forehead flap, tissue from the ear can be still utilized. This method, I believe, was first put forward by a South American and consists in implanting into the palmar aspect of the thumb that amount of tissue which needs to be employed in the graft. Obviously, recourse to such a procedure would only be taken because the surgeon feared that the blood supply of the recipient area would not take the cartilaginous and double skin flap. The utilization of rotation flaps, either from above the nose or from the cheek, likewise should not be lost sight of. I do not believe that any one operative procedure will always answer the problems that attend these apparently minor defects, yet defects which are extremely difficult to repair.

Dr. Walter B. Macomber, Albany, N. Y.: It is a privilege to discuss this paper of Dr. Barrett Brown and Colonel Cannon. It demonstrates what a surgeon must have for the advancement of plastic and reconstructive surgery, forever looking for something new to help to improve technics of years past. It is a one stage procedure as far as the reconstruction of the nose is concerned, but in many cases the ear means a two or more stage procedure, and reconstruction of the ear is decidedly difficult. It is one of the hardest parts of the body to reconstruct. Most nasal deformities during this war were secondary to burns which did not spare the vulnerable ear, thereby preventing the use of this donor site. There was so much scarring that the little tissue left could not be used as a free graft. Nasal deformities, except those secondary to malignancy, are usually associated with extensive scarring, and the recipient site is not conducive to the taking of even a thick split graft, let alone a composite graft. As stated by Colonel Cannon, the size of the graft will lend itself to the repair of relatively small defects. The possible chances of losing the graft in hands other than those of Dr. Brown and Colonel Cannon would create a major deformity of the ear, provided the deformity of the nose was quite large.

Col. Bradford Cannon, Boston: There is not much for me to add except to thank the two men who have been kind enough to discuss this paper and to say that I hope those who are interested in plastic surgery of the nose will try this procedure and see whether it is not as simple and satisfactory as any procedure which was ever utilized in correction of these deformities.

Emotion and Illness.—Every person reacts emotionally in his own fashion to environmental demands, whether these include accidents, infections, laws, enforced association, fishing trips, garden clubs or bad weather. The significant fact is that every one reacts and that every one develops body symptoms if the emotional stimulus is sufficiently strong. . . . Ordinarily the symptoms are of short duration, subsiding with the removal of the stimulus. If adjustment to the environmental demands is faulty, the individual takes recourse to anxiety, headaches, nausea and vomiting, amblyopia or obsessions. Individuals suffering from psychosomatic ailments do not always show manifest symptoms of emotional imbalance; therefore the psychic factors which are underlying or complicating their condition often remain undetected, and his fact may delay or prevent recovery.—Caveny, Elmer L.: Emotion: The Etiologic Relation to Illness, Naval Medical Bulletin, May-June 1947.

Clinical Notes, Suggestions and New Instruments

FATAL PEDICULICIDE POISONING (ABSORPTION THROUGH SCALP)

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Cumberland, Md.

The following is the report of a fatal case with autopsy observations in which death resulted from the use of a pediculicide containing picrotoxin and veratrine. No other similar case has been found in the medical literature.

Picrotoxin and veratrine are commonly used as ointments, powders or liquid preparations in the treatment of pediculosis, scabies and other parasitic diseases of skin in both man and animals. These drugs if used cautiously are effective, but when they are used indiscriminately there is considerable danger because of the large areas of skin available for absorption of the compounds. The pediculicide used in this case, "kil-ve," has for its active ingredients fishberry and sabadilla seed, which are extracted in isopropyl alcohol 72 per cent and water 27.5 per cent.

Picrotoxin is derived from cocculus indicus (the seed of Anamirta paniculata, or fishberry; used for poisoning fish, adulterating beer, and in "knockout drops"). The external use against pediculi has given rise to toxic effects.[1] The symptoms of poisoning in man consist of burning sensation, nausea, salivation, cold sweat, pallor, colic, vomiting, diarrhea, palpitation and shallow respiration; the pulse rate may be slowed or quickened. These are rapidly followed by confusion, stupor and unconsciousness. After one-half to three hours, trembling, clonic and tonic convulsions appear. These generally pass into paralysis and death by asphyxiation.

Picrotoxin ⅓ grain (0.022 Gm.) has caused unpleasant symptoms, and from experiments on animals it is thought that 2 or 3 grains (0.13 or 0.195 Gm.) would be a dangerous dose for man. Death is said to have resulted, however, from 36 grains (2.4 Gm.) of powdered berries; this would equal about ⅓ grain (0.022 Gm.) of picrotoxin. An interesting sidelight is that patients poisoned by barbituric acid derivatives are able to take doses of picrotoxin ranging from 1.079 to 2.296 Gm.[2]

Death from gastrointestinal absorption may occur within thirty minutes to three hours. In Thompson's case,[3] in which the drug was absorbed from the skin, death occurred in six hours.

The postmortem observations are those of asphyxia with hyperemia and edema of the lungs and brain. No really characteristic findings have been observed in man.

Veratrine is a mixture of alkaloids extracted from sabadilla seeds. Therapeutically it is used as a counterirritant in neuralgic conditions. In the form of sabadilla seeds it is used as a parasiticide against pediculi capitis. The irritation is severe, and absorption has caused serious symptoms.[4] When veratrine is taken internally toxic symptoms may appear in man in twenty minutes or be delayed for an hour or more. Symptoms begin with prickling and burning of the mouth, followed by sensation of warmth and burning in the stomach. There is great thirst and difficulty in swallowing. Then follows salivation, nausea and persistent vomiting. Colic and abdominal pain may also be present. Death is due to cardiac and respiratory failure. Postmortem observations are not characteristic, although congestion of the gastrointestinal tract and brain are found.

REPORT OF CASE

History.—V. B., a white girl aged 2 years, was first seen in the Baltimore city mortuary. The history obtained from the mother was that the child had head lice and that for the past month she had been using a pediculicide called "kil-ve." The mother claimed that the child had never been sick and had been active before death. She put her to bed at 4 p. m. and when she returned at 7 p. m. the child was dead.

The mother denied that the child could have taken any of the pediculicide by mouth, either directly or indirectly. According to her story she used the whole 2¾ ounce (81 cc.) bottle (directions called for 2 or 3 tablespoonfuls, 30 to 45 cc.) in one application. She could not give the time of the last application, but the child's hair contained the preparation when it was examined in the mortuary.

The mother's story was not taken as too reliable.

Autopsy.—The body was that of a well developed and well nourished white girl whose hair was covered with a myriad of live lice. The hair pulled out easily, taking with it patches of scalp. There was no external evidence of injury or violence. The pupils were central and equal. There was a slight frothy secretion from the nose and mouth. The neck contained no enlarged glands. The chest and abdomen were of normal contour. The extremities and genitalia showed nothing of note

The body was opened, and all the organs were normally disposed. The pleural cavities were dry. The peritoneum was smooth and glistening, and no free fluid was present.

The heart showed slight right ventricular dilatation, otherwise no abnormality was present. The myocardium was of good tone.

The lungs were somewhat congested and exuded a frothy fluid. Their external surfaces were smooth. There was a slight injection of the larger bronchi. Vascular or bronchial obstruction was not present.

The thymus was small and on section revealed normal architecture.

The liver was paler than is usual. The external surface was smooth, and on section there was a uniformity of structure.

The spleen was of normal size, and the pulp was somewhat friable.

The adrenals both externally and on cut section showed nothing of note.

The kidneys were of normal size and consistency. On section there were definite demarcations between the cortices and medullae. The pelves were pale. The ureters were of normal caliber. The bladder contained about 300 cc. of pale urine. The mucosa was pale, and the wall was of normal thickness.

The stomach contained about 30 cc. of bile-stained liquid and food particles. The mucosa showed no evidence of erosion or inflammation. The intestines manifested no gross changes.

The brain exhibited pronounced edema as evidenced by flattening of all convolutions. No exudates or hemorrhages were present.

Microscopic Observations.—Except for the liver, lungs and brain there were no remarkable or significant changes in any of the organs. The brain showed much edema. The cells were well preserved. The liver manifested moderate cell necrosis around the central veins. This process was no more pronounced than that seen in congestive changes. Various sections taken from the lungs all exhibited fairly well defined edema and congestion. The alveoli were filled with acellular fluid. The alveolar walls were thickened by edema and dilated vessels containing red blood cells. No evidence of inflammation was present.

Toxicologic Examination.—The stomach contents, liver and brain were used in the toxicologic examination.[5] The stomach contents were negative. The extracts of liver and brain both revealed the presence of picrotoxin and veratrine. The residue from 120 Gm. of liver yielded 1 mg. of picrotoxin. Veratrine was found only in traces.

From the Department of Pathology of University of Maryland School of Medicine, and Office of Medical Examiner, Baltimore.

[1] Sollmann, T.: A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology, Philadelphia, W. B. Saunders Company, 1937, p. 252.

[2] Burdick, D. L., and Rovenstine, E. A.: Picrotoxin in Barbiturate Poisoning, Ann. Int. Med. **22**: 819 (June) 1945.

[3] Cited by Peterson, F.; Haines, W. S., and Webster, R. W.: Legal Medicine and Toxicology, Philadelphia, W. B. Saunders Company, 1926, vol. 2, p. 765.

[4] Sollmann.[1]

[5] Examination by Henry C. Freimuth, Ph.D., Office of Medical Examiner, Baltimore, Md.

COMMENT

It can be concluded, in the absence of any changes in the stomach or intestines and in view of the negative stomach contents, that the presence of picrotoxin and veratrine in the liver and brain was the result of absorption from the scalp. The concentration of picrotoxin was sufficient to cause death. The role played by the traces of veratrine is believed to be of minor importance in this case.

This case illustrates the importance of absorption from the skin. The various preparations which are used for treatment of the skin and scalp are no doubt partially absorbed. Care must be taken in the selection and use of these preparations. Work on the permeability of skin conclusively shows that many substances are absorbed and may be recovered in blood, urine or exhaled air. Lipoid solubility is not the only condition for absorption by the skin; inorganic salts are also absorbed in small quantities.[6]

SUMMARY

Preparations containing picrotoxin, veratrine or a combination of both are frequently used in treatment of parasitic conditions of the skin. Absorption through the skin may give rise to toxic symptoms and even death. The manner of death, the presence of pulmonary and cerebral edema, the absence of any specific observations at autopsy and the recovery of the drug from the organs are compatible with the action of picrotoxin and veratrine.

MYOKYMIA—A CAUSE OF "RESTLESS LEGS"

RICHARD L. MASLAND, M.D.
Winston-Salem, N. C.

The purpose of this article is to point out an entity, not previously considered, which can give rise to the complaints described as "restless legs." This manifestation has been termed myokymia. It is characterized by the occurrence of irregular fascicular twitching of the muscles.

It is observed most frequently in neurotic persons, in those in debilitated states and in the elderly. The patients complain of a crawling sensation in the skin of the calves and thighs and occasionally of other parts of the body. This is most disturbing when the patient is fatigued and is relaxing, as on retiring. The sensation of crawling under the skin is often accompanied by an unpleasant fatigued aching of the muscle. The twitching tends to disappear during the night, to reappear shortly after waking and to increase during the day. It is intensified by exercise, nervous tension or cold. Persons suffering from this condition are also subject to muscular cramps, especially if the feet are cold or if the muscles are contracted strongly in the shortened position.

The fasciculation is most easily observed by having the patient lie face down with the calves exposed and in a good light. Under these conditions, and with the feet held in plantar flexion by the bed, the muscles of the calf are shortened and relaxed. Observation over a period of from one to five minutes will disclose the occurrence of occasional flickering movements of the skin which are caused by fasciculation of the underlying muscle. If the muscle is tapped with a reflex hammer the twitching is increased.

Although it has been stated by some observers[2] that the twitching of myokymia can be distinguished from the fasciculation observed in anterior horn cell disease, others[3] have been unable to make this distinction either by clinical observation or by electromyogram. However, the two conditions can be distinguished by the lack of muscular atrophy in myokymia as well as by the lack of reflex abnormalities. It has also been suggested that twitching of this sort is always a precursor of atrophy due to organic disease of the nervous system. It is true that in amyotrophic lateral sclerosis twitching may appear several months before there is evident weakness or atrophy. However, the occurrence of twitching of the muscles of the calf is a not infrequent occurrence in normal persons, and I have personally followed a patient with active myokymia for ten years and have found no evidence of organic disease.

The administration of small doses of neostigmine bromide (0.5 mg.) causes a great increase in the twitching,[4] and this fact suggests that the fasciculation produced by the drug and that observed in myokymia have a common origin. This probably represents either a high level of acetylcholine at the nerve ending or possibly an increased irritability of this structure.[5] The fasciculation observed in anterior horn cell disease probably has a similar peripheral origin, although the mechanism of its development may be different.[5b]

The twitching of myokymia is disturbing only to the neurotic patient, and many other persons are completely unaware of it. Treatment is therefore primarily a matter of reassurance and redirection of the patient's interest away from this unimportant symptom. The administration of small subcurarizing doses of a curare preparation will stop the twitching at a dosage level far less than that required for curarization,[6] and it is probable that the use of the newly developed preparation of curare in oil[7] would be effective in this condition. It is questionable, however, whether such treatment is justifiable in view of the lack of importance of the symptom involved.

Council on Foods and Nutrition

ACCEPTED FOODS

The following foods, which are used primarily in the feeding of infants and small children, have been accepted as conforming to the Rules of the Council on Foods and Nutrition of the American Medical Association.

JAMES R. WILSON, M.D., *Secretary.*

PREPARATIONS USED IN THE FEEDING OF INFANTS

Libby, McNeill and Libby, Chicago.

LIBBY'S STRAINED AND HOMOGENIZED SQUASH consists of squash, salt and water.

Analysis (submitted by manufacturer).—Total solids 9.05%, moisture 90.95%, protein (N × 6.25) 0.75%, fat (ether extract) 0.05%, ash 1.14%, crude fiber 0.85%, carbohydrates other than crude fiber (by difference) 6.26%.

Calories.—0.29 per gram; 8.23 per ounce.

Vitamins and Minerals.—	Per Hundred Grams
Vitamin A	1,562 U. S. P. units
Thiamine	0.013 mg.
Riboflavin	0.042 mg.
Ascorbic acid	4.90 mg.
Niacin	0.420 mg.
Salt	700.00 mg.
Calcium	44.10 mg.
Phosphorus	12.20 mg.
Iron	0.30 mg.

Libby, McNeill and Libby, Chicago.

LIBBY'S STRAINED AND HOMOGENIZED VEGETABLES WITH BACON AND BARLEY consists of water, tomato juice, carrots, sweet potatoes, potatoes, bacon, barley, celery, onions and salt.

Analysis (submitted by manufacturer).—Total solids 14.73%, moisture 85.27%, protein (N × 6.25) 1.59%, fat (ether extract) 3.20%, ash 0.96%, crude fiber 0.47%, carbohydrates other than crude fiber (by difference) 8.51%.

Calories.—0.71 per gram; 20.16 per ounce.

Vitamins and Minerals.—	Per Hundred Grams
Vitamin A	4,301 U. S. P. units
Thiamine	0.038 mg.
Riboflavin	0.022 mg.
Ascorbic acid	2.40 mg.
Niacin	0.61 mg.
Salt	670.00 mg.
Calcium	15.70 mg.
Phosphorus	34.70 mg.
Iron	0.63 mg.

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[6] Burgi, E.: Permeability of the Skin to Various Substances, Wien. klin. Wchnschr. **49**: 1545 (Dec. 18) 1936.

Assistant Professor of Neuropsychiatry, Bowman Gray School of Medicine.

[1] Footnote deleted on proof.

[2] Denny-Brown, D., and Pennybacker, J. B.: Brain **61**: 311, 1938.

[3] Ford, F. R.: Bull. Johns Hopkins Hosp. **64**: 114, 1939.

[4] Russel, C. K.; Odom, G., and McEachern, D.: Tr. Am. Neurol. A. **64**: 120, 1938.

[5] (a) Masland, R. L., and Wigton, R. S.: J. Neurophysiol. **3**: 269, 1940. (b) Eccles, J. C.; Katz, B., and Kuffler, S. W.: ibid. **5**: 211, 1942.

[6] Gammon, G. D.; Harvey, A. M., and Masland, R. L.: Biol. Symposia **3**: 291, 1941. Russel, Odom and McEachern.[4]

[7] Schlesinger, Edward B.: Am. J. Med. **1**: 518, 1946.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FORTY-SEVENTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., F. H. Arestad, M.D., and Anne Tipner

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This report is the forty-seventh annual compilation of information and statistics on medical education in the United States and Canada by the Council on Medical Education and Hospitals of the American Medical Association.

For the first time in several years the report contains specific information concerning the financial support of undergraduate medical education in this country. In addition to the various statistics concerning medical schools, students and graduates that are regularly included in this report, several subjects of present interest are discussed. These include formal basic science training for hospital residents, the academic performance of veterans, the production of physicians during the past ten years and the continuation of the accelerated program.

For the first time since 1942 the paper supply has permitted the inclusion of a detailed summary of the requirements of the various examining boards in the medical specialties. The full text of the "Essentials of Approved Residencies and Fellowships" as revised to June 9, 1947 is also presented.

The hospitals approved for internships, residencies and fellowships have been listed. Separate reprints of these lists are available for distribution in addition to the reprints of the complete report.

The data presented in this review are obtained from official reports The Council and The Journal express their sincere gratitude and appreciation to the officers of the medical schools, hospitals and other agencies whose cordial and continuing cooperation makes possible each year the compilation and presentation of this body of fundamental information concerning medical education in the United States and Canada.

Medical School Calendars

This 1947 Educational Number presents data for the 1946-1947 academic year. Some irregularity of medical school calendars persists as a consequence of the accelerated program. It is necessary therefore that the sessions that are reported in this Educational Number be identified by specific dates for each school. This has been done for the four year schools in the United States in table 1, for the medical schools in Canada in table 2 and for the schools of the basic medical sciences in the United States in table 3.

Freshman classes for the academic year 1946-1947 began in September or October in all but six schools which had admitted classes earlier in the year. Four schools (Louisville, Minnesota, Marquette, Mississippi) admitted two freshman classes.

Tables 1, 2 and 3 also give the dates of the next two entering freshman classes. For the academic years 1947-1948 and 1948-1949 freshmen will be admitted in September or October by all but two schools. Utah has established June as the month for the admission of freshmen in these years, and Tennessee will admit freshmen quarterly in September, December, March and June. Mississippi, in addition to admitting a class in September, is planning to admit a second freshman class in January or February as a regular practice.

The data on graduates are for the thirteen month period June 1, 1946 to June 30, 1947. All the four year schools graduated at least one class during this period. Ten schools, excluding the schools on the quarter system, graduated two classes. For four of these schools (Alabama, Stanford, Buffalo and Syracuse) no graduations were reported in the 1945-1946 Educational Number. The other six schools graduated classes early in the period covered by that number.

TABLE 1.—*Admission and Graduation Calendars of Medical Schools in the United States*

SCHOOL	Freshman Classes Included in This Educational Number		Dates of Next Two Entering Classes		Graduating Classes Included in This Educational Number		Dates of Next Two Graduating Classes	
	Date of First Class	Date of Second Class			Date of First Graduation	Date of Second Graduation		
Medical College of **Alabama**	10- 7-46	......	10- 6-47	10- 4-48	10-25-46	6-10-47	......	6-11-49
University of **Arkansas** School of Medicine	9-30-46	......	9-29-47	9-27-48	6-24-46	6-23-47	6-21-48	6-20-49
University of **California** Medical School	9-19-46	......	9-18-47	9-48	9-19-46	6-21-47	6-19-48	6-49
College of Medical Evangelists	9-22-46	......	9-21-47	9-19-48	1- 2-47	......	6-13-48	6-12-49
University of Southern California School of Medicine	9-16-46	......	9-15-47	9-13-48	6-14-47	......	6-15-48	6-11-49
Stanford University School of Medicine	9-23-46	......	9-29-47	9-27-48	6-16-46	6-15-47	6-13-48	6-15-49
University of **Colorado** School of Medicine	9-30-46	......	10- 6-47	10- 6-48†	6- 9-47	......	6-14-48	6-14-49†
Yale University (**Connecticut**)	9-16-46	......	9-22-47	9-20-48	6-18-47	......	6-23-48	6-15-49
Georgetown University (**District of Columbia**)	9-16-46	......	9-22-47	9-20-48	6- 9-47	......	6- 7-48	6- 6-49
George Washington University	9-30-46	......	9-15-47	9-13-48	5-28-47	......	5-26-48	5-25-49
Howard University College of Medicine	9-28-46	......	9-27-47	9-25-48	6- 7-46	6- 6-47	6- 4-48	6- 3-49
Emory University School of Medicine (**Georgia**)	9-21-46	......	9-18-47	9-48	2-28-47	......	6- 5-48	6-49
University of Georgia School of Medicine	9- 9-46	......	9-11-47	9- 9-48	3-21-47	......	3-22-48	6-20-49
Loyola University (**Illinois**)	9-30-46	......	9-22-47	9-48†	2- 9-47	......	3-29-48	6-49†
Northwestern University Medical School	9-27-46	......	9-26-47	9-21-48	*	......	§	§
University of Chicago, The School of Medicine	9-24-46	......	9-24-47	9-48	¶	......	#	#
University of Illinois College of Medicine	9-30-46	......	9-30-47	9-28-48	6-21-46	6-20-47	6-19-48	6-18-49
Indiana University School of Medicine	10-18-46	......	9-22-47	9-20-48	6-15-47	......	6-15-48	6-11-49
State University of **Iowa** College of Medicine	9-23-46	......	9-22-47	9-20-48	3-15-47	......	3-13-48	6-49
University of **Kansas** School of Medicine	9-26-46	......	9-17-47	9-48	6-16-47	......	6- 7-48	6-49
University of Louisville (**Kentucky**)	4- 1-46	1- 6-47	9-29-47	9-13-48	12-21-46	......	9-20-47	6-15-48
Louisiana State University School of Medicine	9- 9-46	......	9- 4-47	9- 9-48	3-12-47	......	5-24-48	5-28-49
Tulane University School of Medicine	9- 3-46	......	9- 2-47	9- 1-48	6-11-47	......	6- 9-48	6- 9-49
Johns Hopkins University (**Maryland**)	9-30-46	......	9-29-47	9-27-48	6-10-47	......	6- 8-48	6-14-49
University of Maryland School of Medicine	9- 5-46	......	9-18-47	9-16-48	6- 7-47	......	6- 5-48	6- 4-49
Boston University (**Massachusetts**)	9-19-46	......	9-15-47	9-48	5-26-47	......	6- 7-48	6-49
Harvard Medical School	9-23-46	......	9-22-47	9-27-48	6- 5-47	......	6-10-48	6-23-49
Tufts College Medical School	9-25-46	......	9-24-47	9-48	6-15-47	......	6-20-48	6-49
University of **Michigan** Medical School	9-23-46	......	9-22-47	9-20-48	12-14-46	......	6-12-48	6-49
Wayne University College of Medicine	7- 8-46	......	9-15-47	9-48	6-12-47	......	6-15-48	6-49
University of **Minnesota** Medical School	4- 1-46	1- 6-47	9-29-47	10- 1-48	12-19-46	......	8-29-47	6-48
St Louis University (**Missouri**)	9-17-46	......	9-16-47	9-21-48	6- 3-47	......	6- 1-48	6- 7-49
Washington University School of Medicine	9-16-46	......	9-22-47	9-20-48‖	6-12-47	......	6- 8-48	6- 7-49‖
Creighton University (**Nebraska**)	9-27-46	......	9-26-47	9-25-48	6- 5-47	......	6- 3-48	6-49
University of Nebraska College of Medicine	9-13-46	......	9-19-47	9-48	3-23-47	......	3-20-48	6-49
Albany Medical College (**New York**)	9-30-46	......	9-47	9-48	5-28-47	......	6-48	5-49
Long Island College of Medicine	9-23-46	......	9-22-47	9-20-48	2-27-47	......	6-10-48	6- 4-49
University of Buffalo School of Medicine	9-30-46	......	9-22-47	9-20-48	6-22-46	6- 4-47	6- 9-48	6 11-49
Columbia University	9-12-46	......	9-11-47	9-48	6- 3-47	......	6- 1-48	6-49
Cornell University Medical College	9-26-46	......	9-24-47	9-48	3-28-47	......	3-26-48	6-49
New York Medical College	9- 9-46	......	9-15-47	9-13-48	6-11-47	......	6- 9-48	6- 8-49
New York University College of Medicine	9-23-46	......	9-22-47	9-48	6-11-47	......	6-48	6-49
University of Rochester School of Medicine	9-16-46	......	9-22-47	9-48	3-15-47	......	3-27-48	6-49
Syracuse University College of Medicine	9- 2-46	......	9- 8-47†	9-48	6-23-46	6- 2-47	6-14-48	6-49
Duke University School of Medicine (**North Carolina**)	10- 7-46	......	10- 6-47	10- 4-48	6- 2-47	......	5-31-48	6-10-49
Bowman Gray *School of Medicine*	9-25-46	......	9-29-47	10- 4-48	12-15-46	......	12-14-47	12-18-48
University of Cincinnati (**Ohio**)	9-20-46	......	9-22-47	9-48	2- 8-47	......	2-48	6-49
Western Reserve University School of Medicine	9-18-46	......	9-17-47	9-15-48	6-11-47	......	6- 5-48	6- 4-49
Ohio State University College of Medicine	10- 1-46	......	9-30-47	10- 5-48	3-15-47	......	3-19-48	12-48
University of **Oklahoma** School of Medicine	9-16-46	......	9-15-47	9-13-48	6- 2-47	......	5-31-48	6- 6-49
University of **Oregon** Medical School	10- 2-46	......	9-30-47	10-48	6-20-47	......	6-18-48	6-49
Hahnemann Medical College (**Pennsylvania**)	9-22-46	......	9-22-47	9-48	4- 3-47	......	3-18-48	6-49
Jefferson Medical College of Philadelphia	10- 1-46	......	9-11-47	9-13-48‖	5-23-47	......	6- 4-48	6- 4-49‖
Temple University School of Medicine	9-16-46	......	9-22-47	9-48	6-19-47	......	6-17-48	6-49
University of Pennsylvania School of Medicine	9-23-46	......	9-22-47	9-20-48	3-15-47	......	3-48	6-15-49
Woman's Medical College of Pennsylvania	9-11-46	......	9- 8-47	9- 7-48	6- 6-47	......	6- 5-48	6- 5-49
University of Pittsburgh School of Medicine	9-30-46	......	9-29-47	9-27-48‖	4-11-47	......	4- 9-48	6- 5-49
Medical College of the State of **South Carolina**	9-26-46	......	9-25-47	9-23-48	6- 5-47	......	6- 3-48	6- 2-49
*University of **Tennessee** College of Medicine*	9-30-46	......	§	§	‡	......	§	§
Meharry Medical College	9-30-46	......	9-29-47	9-48	6-24-46	6- 2-47	6-21-48	6-49
Vanderbilt University School of Medicine	9-23-46	......	9-22-47	9-48	6- 9-47	......	6- 7-48	6-49
Southwestern Medical College (**Texas**)	9-30-46	......	9- 1-47	9-48	6-10-46	6- 3-47	6- 7-48	6-49
University of Texas School of Medicine	9-23-46	......	9-15-47	9-20-48	2-14-47	......	2-13-48	6-18-49
Baylor University College of Medicine	9- 9-46	......	10- 6-47	10- 4-48	5-26-47	......	6-14-48	6- 6-49
University of **Utah** School of Medicine	6-11-46	......	6-16-47	6-48	12-22-46	......	8-24-47	9-49
University of **Vermont** College of Medicine	9-14-46	......	9-20-47	9-20-48	4-15-47	......	6-21-48	6-20-49
University of **Virginia** Department of Medicine	4- 5-46	......	9-15-47	9-48	6-16-47	......	6-14-48	6-49
Medical College of Virginia	9-18-46	......	9-10-47	9-48	6-17-47	......	6- 8-48	6-49
University of **Wisconsin** Medical School	9-23-46	......	9-29-47	9-28-48	5-24-47	......	6-19-48	6-18-49
Marquette University School of Medicine	11-12-46	3- 4-46	9-29-47	......	11- 2-46	......	7-31-47	6-30-48

* June 19, 1946; Sept. 27, 1946; March 20, 1947; June 18, 1947.
† Approximate.
‡ June, September, December 1946, March and June 1947.
§ September, December, March and June.
¶ June 14, 1946; December 1946; March 21, 1947 and June 1947.
# Dec. 19, 1947; March 19, 1948 and June 18, 1948.
‖ Tentative.

TABLE 2.—*Admission and Graduation Calendars of Medical Schools in Canada*

SCHOOL	Freshman Classes			Graduation Dates		
	Class Included in This Educational Number	Dates of Next Two Classes		Class Included in This Educational Number	Dates of Next Two Classes	
University of Alberta Faculty of Medicine	9-16-46	9-16-47	9-13-48	10- 5-46	5-19-48	5-15-49
University of Manitoba Faculty of Medicine	9-13-46	9-14-47	9-15-48	7-18-46	5-15-48	5-15-49
Dalhousie University Faculty of Medicine	9-10-46	9- 9-47	9- 9-48	5-13-47	5-11-48	5-11-49
Queen's University Faculty of Medicine	9-23-46	9-22-47	Fall 48	6-19-47	......	......
University of Western Ontario Faculty of Medicine	9- 9-46	9- 8-47	9-13-48	6-11-47	6- 2-48	6-13-49
University of Toronto Faculty of Medicine	9-24-46	9-23-47	9-21-48	6-27-47	6-25-48	5-28-49
McGill University Faculty of Medicine	9- 4-46	9- 3-47	9- 8-48	5-28-47	5-26-48	5-18-49
University of Montreal Faculty of Medicine	9-16-46	9-15-47	9-13-48	3- 7-47	5-31-48	5- 6-49
Laval University Faculty of Medicine	9-12-46	9-17-47	9-15-48	7- 1-46	6-30-48	6-10-49
University of Saskatchewan School of Medical Sciences	9-21-46	9-22-47	9-21-48	......	......	......

In table 4 is recapitulated the number of graduations, with dates, which have been held by each of the medical schools in the United States since July 1, 1942, the date on which most schools began wartime acceleration. During the five year period July 1, 1942 to June 30, 1947 a total of 406 graduations have been held. This figure does not include the graduations at Tennessee, which were on a quarterly schedule.

On the prewar schedule of one graduation class for each medical school per calendar year, the number of graduations that would have normally been held during this period by the medical schools in the United States, excluding Tennessee, would have been 136. The accelerated program thus made possible the training and graduation of seventy additional classes in the five year period.

TABLE 3.—*Admission Calendars of Schools of the Basic Medical Sciences in the United States*

SCHOOL	Freshman Classes Included in This Educational Number: Date of First Class	Date of Second Class	Dates of Next Two Entering Classes	
University of Mississippi School of Medicine	9 21 46	1 30 47	9 16 47	2 9 48
University of Missouri School of Medicine	9 21 46	......	9 16-47	9-48
Dartmouth Medical School, (New Hampshire)	9 30 46	......	10- 3 47	9 30 48
University of North Carolina School of Medicine	9 16 46	......	9 22 47	9 48
University of North Dakota School of Medicine	9 23 46	......	9 21 47	9 22 48
University of South Dakota School of Medicine	9 16 46	......	9 8-47	9- 6-48
West Virginia University School of Medicine	9 16 46	......	9 15-47	9 14-48

TABLE 4.—*Medical School Graduations in the United States, July 1, 1942-June 30, 1947*

	1	2	3	4	5	6	7
Medical College of Alabama	10-46	6 47	....	....	....	....	....
University of Arkansas	6-43	3 44	12 44	9 45	6-46	6-47	. ..
College of Medical Evangelists, (California)	2 43	10-43	10 44	6-45	2 46	9 46	6-47
Stanford	6 43	1-44	10 44	6 45	6 46	6-47	....
University	2 43	1 44	6 44	1-45	9-45	1-47	....
University	1-43	7-43	3 44	2 45	1 46	6 47	....
University	3 43	12 43	9 44	6 45	3 46	6 47	....
Yale University, (Connecticut)	3 43	12 43	9 44	6-45	3 46	6 47	....
George Washington University, (District of Columbia)	2 43	11-43	9-44	5-45	2-46	5-47	....
Georgetow	3 43	12 43	9 44	6 45	3 46	6 47	..
Howard	6 43	3 44	12 44	9-45	6-46	6-47	....
Emory Un	3 43	12 43	9 44	6-45	3 46	2 47	..
University of Georgia	3 43	12 43	9-44	6 45	3-46	3 47	.
Loyola University, (Illinois)	4-43	12-43	9 44	7 45	4-46	2 47	....
Northwestern University	6 43	12 43	9-44	6-45	3 46	3-47	.. .
University of Chicago	6 43	12 43	9 44	6-45	3 46	3 47	....
University of Illinois	3 43	12 43	12 44	9 45	6 46	6 47	
Indian	12 42	8 43	4 44	12 44	8-45	4 46	6 47
State	2 43	12 43	9 44	6-45	3 46	3 47	....
University of Kansas	5 43	1-44	10 44	6-45	3 46	6 47	....
University of Louisville, (Kentucky)	2-43	11 43	9 44	6-45	3 46	12 46	....
Louisiana State University	3-43	12 43	9 44	6-45	3 46	3 47	....
Tulane University	5 43	2 44	10-44	8 45	5-46	6 47	....
Johns Hopkins University, (Maryland)	2 43	11 43	8-44	6-45	3 46	6-47	....
Universi	3 43	12 43	9 44	6-45	3 46	6-47	....
Boston	3-43	12 43	9 44	6-45	3 46	5 47	....
Harvard	3 43	12-43	9 44	6-45	3 46	6-47	....
Tufts Co	3 43	12 43	9 44	6-45	3 46	6 47	....
Universi	2 43	10 43	7 44	9-45	12 46		....
Wayne	3 43	12 43	9 44	6-45	3-46	6-47	....
Universi	6 43	12 43	8 44	6-45	3 46	12 46	. .
St Loui	2 43	11-43	9 44	6-45	2-46	6-47	....
Washing	3 43	12 43	9 44	6 45	3-46	6-47	....
Creighto	3 43	12 43	9 44	6-45	3 46	6-47	....
Universi	3 43	12 43	9 44	6-45	3 46	6-47	....
Albany	3 43	12 43	9 44	6-45	3 46	3 47	.. .
Long Isl	3 43	12 43	9 44	6-45	3 46	2-47	....
University of Buffalo	3 43	12 43	9 44	6-45	6-46	6-47	....
Columbia	3 43	12 43	9 44	6-45	3 46	5-47	.. .
Cornell	3 43	12-43	9 44	6-45	3 46	6-47	....
New Yor	3 43	12 43	9 44	6-45	3-46	6-47	....
New York	3 43	12 13	9 44	6-45	3-46	6-47	....
University	3 43	12 43	9 44	6-45	3 46	3-47	.. .
Syracuse	3 43	12 43	9 44	6-45	6 46	6-47	....
Duke Univ	3 43	12 43	9 44	6-45	4-46	6 47	....
Bowman G	12 43	9 44	6 45	3-46	12 46	...	....
Ohio State	3 43	12 43	9 44	6-45	3 46	3-47	..
University o	2 43	12 43	8 44	6-45	2-46	2-47	....
Western Res	2 43	10 43	9 44	6-45	3 46	6-47	....
University of	5 43	12 43	9-44	6-45	3 46	6 47	....
University of Oregon	3 43	12 43	9 44	6-45	3 46	6-47	....
Hahnemann Medical College, (Pennsylvania)	3 43	12 43	9 44	6-45	3-46	4 47	....
Temple	3 43	12 43	9-44	6-45	3 46	6-47	....
Jefferson	3 43	1 44	9 44	6-45	3 46	5 47	....
Universi	4 43	12 43	9-44	6-45	3 46	3 47	....
Universi	3 43	12 43	9 44	6 45	3 46	4-47	....
Woman's	3 43	3 44	1-45	1 46	6 47	.	....
Medical College of South Carolina	3 43	12 43	9 44	6 45	3 46	6 47	....
Meharry Medical College, (Tennessee)	6 43	3 44	12 44	9 45	6 46	6-47	....
University of Tennessee[1]	...	...	.	...	. .	.	....
Vanderbi	3 43	12 43	9 44	6-45	3 46	6-47	....
Baylor	5-43	3 44	11 44	7 45	3-46	5 47	....
Southwe	3 44	12 44	9 45	6-46	6-47		....
University of Texas	12 42	7 43	6 44	6-45	3-46	2-47	. ..
University of Utah	9 44	6 45	3 46	12-46			....
University of Vermont	3 43	12 43	9-44	6 45	4-46	4-47	....
Medical College of Virginia	3 43	12 43	9-44	6 45	3 46	6-47	....
University of Virginia	3 43	12 43	9 44	6 45	3 46	6 47	....
Marquette University, (Wisconsin)	2-43	10 43	9 44	7 45	3 46	11 46	....
University of Wisconsin	3 43	11-43	9 44	6 45	5 46	5 47	....

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[1] Graduates students quarterly, March, June, September and December.

The dates for the next two graduations for the various schools are shown in tables 1, 2 and 3. During the academic year 1947-1948 seventeen schools, excluding the schools on the quarter system, will graduate classes earlier than May or June. Three schools (Louisville, Minnesota and Marquette) will graduate two classes during the period July 1, 1947 to June 30, 1948. Alabama will have no graduating class during this period. This school did not develop its four year program until July 1943. The first two classes admitted to the four year program were on the accelerated schedule and completed their work in three calendar years. The graduation of both these classes is reported in this number. Alabama has now discontinued acceleration and in the process of reconversion will not graduate its next class until June 1949.

The estimated number of graduates for each medical school in this country and the distribution of graduations by months for the period July 1, 1947 to June 30, 1948 are shown in table 5.

In 1948-1949, according to present schedules, all but three schools (Bowman Gray, Ohio State and Utah) will hold their graduations in May or June.

Continuation of the Accelerated Program

During the academic year 1946-1947 eighteen schools continued to have an accelerated program either in part or in whole. In certain schools all classes were on the accelerated program, in others only one or two. Acceleration was required of all students in the classes concerned in some schools; in other schools the students could elect to follow an accelerated schedule if they so desired. The data with respect to accelerated programs in 1946-1947 and 1947-1948 are summarized in table 6.

Four schools (Louisville, Minnesota, Tennessee and Utah) are planning to continue an accelerated program

TABLE 5.—*Estimated Number of Graduates of Medical Schools in the United States, July 1, 1947 to June 30, 1948*

	1947						1948						
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Totals
Medical College of Alabama	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Arkansas	..	..	..	..	..	..	..	..	..	..	..	56	56
College of Medical Evangelists, (California)	..	..	..	..	..	..	..	..	..	..	..	85	85
Stanford University	..	..	..	..	..	..	..	..	..	..	..	62	62
University of California	..	..	..	..	..	..	..	..	..	..	..	69	69
University of Southern California	..	..	..	..	..	..	..	..	..	..	..	62	62
University of Colorado	..	..	..	..	..	..	..	..	..	..	..	55	55
Yale University, (Connecticut)	..	..	..	..	..	..	..	..	..	..	..	58	58
George Washington University, (D. C.)	..	..	..	..	..	..	..	..	..	..	81	..	81
Georgetown University	..	..	..	..	..	..	..	..	..	..	..	84	84
Howard University	..	..	..	..	..	..	..	..	..	..	..	65	65
Emory University, (Georgia)	..	..	..	..	..	..	..	..	..	..	..	51	51
University of Georgia	..	..	..	..	..	..	..	..	67	..	..	..	67
Loyola University, (Illinois)	2	..	..	..	..	1	..	..	67	..	..	..	70
Northwestern University	..	..	..	..	..	26	..	..	45	..	..	71	142
University of Chicago	..	..	..	..	..	13	..	..	35	..	..	4	52
University of Illinois	..	..	..	..	..	3	..	..	..	..	..	149	152
Indiana University	..	..	..	..	..	..	..	..	..	..	..	100	100
State University of Iowa	..	..	..	..	..	..	..	..	61	..	..	..	61
University of Kansas	..	..	..	..	..	..	..	..	..	..	..	60	60
University of Louisville, (Kentucky)	..	..	85	..	..	..	..	..	..	..	..	61	146
Louisiana State University	..	..	..	..	..	..	..	..	..	..	80	..	80
Tulane University	..	..	..	..	..	..	..	..	..	..	..	120	120
Johns Hopkins University, (Maryland)	..	..	..	..	..	..	..	..	..	..	..	80	80
University of Maryland	..	..	..	..	..	..	..	..	..	..	..	80	80
Boston University, (Massachusetts)	..	..	..	..	..	..	..	..	..	..	..	55	55
Harvard Medical School	..	..	..	..	..	..	..	..	..	..	..	142	142
Tufts College Medical School	..	..	..	..	..	..	..	..	..	..	..	100	100
University of Michigan	..	..	..	..	..	..	..	..	..	..	..	134	134
Wayne University	..	..	..	..	..	..	..	..	..	..	..	60	60
University of Minnesota	..	82	..	..	..	..	..	..	..	..	..	75	157
St. Louis University, (Missouri)	..	..	..	..	..	..	..	..	..	..	..	120	120
Washington University	..	..	..	..	..	..	..	..	..	..	..	96	96
Creighton University, (Nebraska)	..	..	..	..	..	..	..	..	..	..	..	64	64
University of Nebraska	..	..	..	..	..	..	..	..	67	..	..	..	67
Albany Medical College, (New York)	..	..	..	..	..	..	..	..	..	..	..	41	41
Long Island College of Medicine	..	..	..	..	..	..	..	..	..	..	..	94	94
University of Buffalo	..	..	..	..	..	..	..	..	..	..	..	72	72
Columbia University	..	..	..	..	..	..	..	..	..	..	..	106	106
Cornell University	..	..	..	..	..	..	..	..	78	..	..	..	78
New York Medical College	..	..	..	..	..	..	..	..	..	..	..	122	122
New York University	..	..	..	..	..	..	..	..	..	..	..	136	136
University of Rochester	..	..	..	..	..	..	..	..	68	..	..	..	68
Syracuse University	..	..	..	..	..	..	..	..	..	..	..	41	41
Duke University, (North Carolina)	..	..	..	..	..	..	..	..	..	..	64	..	64
Bowman Gray School of Medicine	..	..	..	..	..	40	..	..	..	..	..	..	49
Ohio State University	..	..	..	..	..	..	..	..	72	..	..	..	72
University of Cincinnati	..	..	..	..	..	..	..	77	..	..	..	..	77
Western Reserve University	..	..	..	..	..	..	..	..	..	..	..	88	88
University of Oklahoma	..	..	..	..	..	..	..	..	..	..	62	..	62
University of Oregon	..	..	..	..	..	..	..	..	..	..	..	68	68
Hahnemann Medical College (Pennsylvania)	..	..	..	..	..	..	..	..	114	..	..	..	114
Jefferson Medical College	..	..	..	..	..	..	..	..	..	..	..	152	152
Temple University	..	..	..	..	..	..	..	..	..	..	..	126	126
University of Pennsylvania	..	..	..	..	..	..	..	..	128	..	..	..	128
University of Pittsburgh	..	..	..	..	..	..	..	..	..	75	..	..	75
Woman's Medical College	..	..	..	..	..	..	..	..	..	..	..	34	34
Medical College of South Carolina	..	..	..	..	..	..	..	..	..	..	..	53	53
Meharry Medical College, (Tennessee)	..	..	..	..	..	..	..	..	..	..	..	60	60
University of Tennessee	..	..	24	..	..	27	..	..	28	..	..	21	100
Vanderbilt University	..	..	..	..	..	..	..	..	..	..	..	53	53
Southwestern Medical College (Texas)	..	..	..	..	..	..	..	..	..	..	..	51	51
University of Texas	..	..	..	..	..	..	..	80	..	..	..	..	80
Baylor University	..	..	..	..	..	..	..	..	..	..	..	69	69
University of Utah	..	32	..	..	..	..	..	..	..	..	..	..	32
University of Vermont	..	..	..	..	..	..	..	..	..	..	..	42	42
Medical College of Virginia	..	..	..	..	..	..	..	..	..	..	..	87	87
University of Virginia	..	..	..	..	..	..	..	..	..	..	..	60	60
Marquette University, (Wisconsin)	87	..	..	..	..	..	..	..	..	..	..	83	170
University of Wisconsin	..	..	..	..	..	..	..	..	..	..	..	59	59
Totals	89	114	109	0	0	119	0	157	830	75	287	3,936	5,716

for all four classes, at least for the next two years. Three schools (Duke, Bowman Gray and Chicago) will allow students to elect an accelerated program for any or all of the four years. One school (Northwestern) will offer a quarterly schedule in the junior and senior years so that students who elect to do so may complete their courses approximately six months in advance of the regularly scheduled graduation. Mississippi, a two year school, will be on an accelerated program that will enable a student to complete the two years' work in approximately eighteen months.

For the other schools the acceleration of one or more classes during 1946-1947 and 1947-1948 is a temporary measure in the process of deceleration. Acceleration will probably be discontinued in these schools no later than the end of the academic year 1947-1948.

At least eighteen schools will offer a senior year in 1947-1948 that will extend for forty-five weeks or longer. In certain schools the extension of the senior year is planned as a permanent feature. In other schools it is a temporary arrangement associated with deceleration. This trend toward a longer senior year is of considerable interest. Experience may demonstrate that it is a satisfactory method of providing in the curriculum for important subjects that cannot be allotted adequate time in the conventional thirty-two or thirty-six week senior year.

TABLE 6.—*Medical Schools Continuing Accelerated Programs*

School	Classes on Accelerated Schedule	
	1946-1947	1947-1948
Acceleration Required		
University of Louisville	All	All
University of Minnesota	All	All
University of Tennessee [1,2]	All	All
University of Utah	All	All
Marquette University	All	None
State University of Iowa	Senior Junior	Senior
Louisiana State University	Senior Junior	Senior
Hahnemann Medical College	Senior Junior	Senior
Albany Medical College	Senior Junior	Senior
Medical College of Alabama	Senior	None
University of Georgia	Senior	None
University of Mississippi [3]	Sophomore Freshman	Sophomore Freshman
Acceleration Elective		
University of Chicago [2]	All	All
Duke University [2]	All	All
Bowman Gray School of Medicine	All	All
Loyola University	Senior Junior	Senior
Northwestern University [4]	Senior Junior	Senior
Ohio State University	Sophomore	Junior

1. Admits freshmen quarterly.
2. Offers quarterly schedule for all four classes.
3. School of the basic medical sciences.
4. Offers quarterly schedule for juniors and seniors.

Approved Medical Schools

Medical schools in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association are shown in table 7; those in Canada are listed in table 8. The approved schools of the basic medical sciences in the United States and Canada are shown in table 9.

One new school, the Medical College of Alabama, has been added to the list of approved medical schools in the United States. In 1943 the University of Alabama School of the Basic Medical Sciences inaugurated a four year program and changed its name to the Medical College of Alabama. The first junior class was enrolled in June 1945 and the first senior class graduated in October 1946. With its four year program now fully in operation, this school has been transferred from the list of approved schools of the basic medical sciences to the list of approved medical schools.

The Hahnemann Medical College in Philadelphia is on probation, as are also the basic science schools of North Dakota and South Dakota.

Tables 7, 8 and 9 give the quantitative premedical requirements effective next year for each school, the enrolment by classes for the academic year 1946-1947 and the total attendance, which does not include the students in the required intern year. The number of graduates from June 1, 1946 to June 30, 1947 is also given for each school.

For the Canadian schools (table 9) enrolments are also given for premedical students in the medical school, as well as for students in a fifth medical year and the required intern year.

For each school the name of the dean or executive officer is given. Since the publication of last year's Educational Number the executive officers have changed in thirteen of the eighty-seven medical and basic science schools in the United States and Canada. The following schools have appointed new executive officers: Arkansas, Yale, Georgetown, Emory, Illinois, Boston University, Oklahoma, Medical College of Virginia, Marquette, North Dakota, Western Ontario, Toronto and McGill.

Enrolments 1946-1947

Enrolments for the academic year 1946-1947 for the medical schools in the United States are shown in table 7, for the medical schools in Canada in table 8 and for the schools of the basic medical sciences in the United States and Canada in table 9. The enrolment figures in these tables are recapitulated in table 10.

Five of the four year schools (Alabama, Louisville, Minnesota, Utah and Marquette) and one of the two year schools (Mississippi) had two separate classes enrolled in one or more years of the medical school course during 1946-1947.

The total enrolment, excluding students taking a required intern year, in the seventy medical and seven basic science schools in the United States was 23,900. This enrolment is 684 greater than the enrolment for 1945-1946 and is only 766 less than the enrolment of 24,666 for the 1944 "second session," the largest enrolment since 1910.

If the 1,131 students enrolled in the additional classes during 1946-1947 were not included, the total enrolment would have been 22,769. This figure is larger than the enrolment in any of the years from 1910 to 1942 with the exception of 1934 and 1935 (table 21).

From these figures it is apparent that in the first approximately normal postwar year the enrolment in medical schools in the United States has been maintained at nearly a peak figure. It is thus clear that the record of medical education in reconverting to a peacetime status can be compared favorably to the reconversion efforts of other groups in our society.

The total enrolment in the Canadian schools, including one basic science school, was 2,982, which is 412 greater than in the preceding session. There were 399 premedical and 34 fifth (not intern) year students in the Canadian schools. These figures are included in the "total" column of table 8 but not in the "total" column of table 10.

Students in a required intern year numbered 582 in the United States and 170 in Canada.

TABLE 7.—*Approved Medical Schools in the United States*

	Name and Location of School	1948 Premedical Requirement by Years	Students by Classes 1946-1947						1946 Graduates Not Reported in 1946 Educ. No. and 1947 Graduates to June 30, 1947	Executive Officer	
			Freshman	Sophomore	Junior	Senior	Required Intern Year	Totals #			
	ALABAMA										
1	Medical College of Alabama, Birmingham	3	a 52 ..	45 ..	39 ..	21 40	.. ..	157 40	21 40	Roy R. Kracke, M.D., Dean	1
	ARKANSAS										
2	University of Arkansas School of Medicine, Little Rock	2	82	63	56	47	..	248	108§	Benjamin B. Wells, M.D., Dean	2
	CALIFORNIA										
3	University of California Medical School, Berkeley-San Francisco	3	72	73	70	69	..	284	135§	Francis Scott Smyth, M.D., Dean	3
4	College of Medical Evangelists, Loma Linda-Los Angeles	3	79	72	86	87	90	324	90	Harold Shryock, M.D., Dean, Loma Linda; W. F. Norwood, Ph.D., Dean, Los Angeles	4
5	University of Southern California School of Medicine, Los Angeles	3	67	66	65	58	66	256	66	Burrell O. Raulston, M.D., Dean	5
6	Stanford University School of Medicine, Stanford University-San Francisco	3	61	62	60	57	60	240	121§	Loren R. Chandler, M.D., Dean	6
	COLORADO										
7	University of Colorado School of Medicine, Denver	3	70	59	57	55	..	241	55	Ward Darley, M.D., Dean	7
	CONNECTICUT										
8	Yale University School of Medicine, New Haven	3	49	51	62	64	..	226	63	C. N. Hugh Long, M.D., Dean	8
	DISTRICT OF COLUMBIA										
9	Georgetown University School of Medicine, Washington	Degree †	104	88	84	90	..	366	89	Paul A. McNally, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	3	82	72	81	79	..	314	79	Walter A. Bloedorn, M.D., Dean	10
11	Howard University College of Medicine, Washington	2	70	68	66	63	..	267	126§	Joseph L. Johnson, M.D., Dean	11
	GEORGIA										
12	Emory University School of Medicine, Atlanta	3	60	43	51	55	..	209	55	R. Hugh Wood, M.D., Dean	12
13	University of Georgia School of Medicine, Augusta	3	76	75	66	66	..	283	66	G. Lombard Kelly, M.D., Dean	13
	ILLINOIS										
14	Loyola University School of Medicine, Chicago	3	87	58	67	74	..	286	70	James J. Smith, M.D., Dean	14
15	Northwestern University Medical School, Chicago	3	127	120	128	142	149	517	156	J. Roscoe Miller, M.D., Dean	15
16	University of Chicago, The School of Medicine	90 sem. hrs.	61	58	53	58	..	230	62	A. C. Bachmeyer, M.D., Assoc. Dean, Biology Division; F. J. Mullin, Ph.D., Dean of Students	16
17	University of Illinois College of Medicine, Chicago	3	167	153	149	166	..	635	325§	John B. Youmans, M.D., Dean	17
	INDIANA										
18	Indiana University School of Medicine, Bloomington-Indianapolis	3	129	83	86	98	..	396	98	John D. VanNuys, M.D., Dean	18
	IOWA										
19	State University of Iowa College of Medicine, Iowa City	3	93	62	62	74	..	291	74	Ewen Murchison MacEwen, M.D., Dean	19
	KANSAS										
20	University of Kansas School of Medicine, Lawrence-Kansas City	3	74	80	60	73	..	287	73	Harry R. Wahl, M.D., Dean	20
	KENTUCKY										
21	University of Louisville School of Medicine, Louisville	2	b 89 95	70 82	84 63	89 85	.. ..	332 325	87 ..	John Walker Moore, M.D., Dean	21
	LOUISIANA										
22	Louisiana State University School of Medicine, New Orleans	90 sem. hrs.	95	63	81	74	..	313	75	Vernon W. Lippard, M.D., Dean	22
23	Tulane University of Louisiana School of Medicine, New Orleans	3	120	112	103	125	..	460	125	Maxwell E. Lapham, M.D., Dean	23
	MARYLAND										
24	Johns Hopkins University School of Medicine, Baltimore	Degree	76	67	79	77	..	299	79	Alan M. Chesney, M.D., Dean	24
25	University of Maryland School of Medicine and College of Phys. and Surg., Baltimore	3	90	67	80	97	..	334	97	H. Boyd Wylie, M.D., Acting Dean	25
	MASSACHUSETTS										
26	Boston University School of Medicine, Boston	3	68	60	58	58	..	244	57	James M. Faulkner, M.D., Dean	26
27	Harvard Medical School, Boston	2	113	104	142	131	..	490	131	C. Sidney Burwell, M.D., Dean	27
28	Tufts College Medical School, Boston	4 & Degree	111	84	102	103	..	400	103	Dwight O'Hara, M.D., Dean	28
	MICHIGAN										
29	University of Michigan Medical School, Ann Arbor	90 sem. hrs.	115	111	134	140	..	500	140	Albert C. Furstenberg, M.D., Dean	29
30	Wayne University College of Medicine, Detroit	3	65	39	62	64	..	230	62	Hardy A. Kemp, M.D., Dean	30
	MINNESOTA										
31	University of Minnesota Medical School, Minneapolis	3	c 83 110	77 93	92 80	104 82	113 104	356 365	109 ..	Harold S. Diehl, M.D., Dean	31
	MISSOURI										
32	St. Louis University School of Medicine, St. Louis	3	111	93	120	130	..	454	130	Alphonse M. Schwitalla, S.J., Ph.D., Dean	32
33	Washington University School of Medicine, St. Louis	3	86	82	103	96	..	367	97	Robert A. Moore, M.D., Dean	33

	NEBRASKA										
34	Creighton University School of Medicine, Omaha	3	74	40	64	56	..	234	55	Charles M. Wilhelmj, M.D., Dean	34
35	University of Nebraska College of Medicine, Omaha	3	93	71	70	77	..	311	77	Harold C. Lueth, M.D., Dean	25
	NEW YORK										
36	Albany Medical College, Albany	3	51	44	43	45	..	183	43	R. S. Cunningham, M.D., Dean	36
37	Long Island College of Medicine, Brooklyn	3	110	95	95	98	..	398	95	Jean A. Curran, M.D., President and Dean	37
38	University of Buffalo School of Medicine, Buffalo	3	70	60	75	71	..	276	147§	Stockton Kimball, M.D., Dean	38
39	Columbia University College of Physicians and Surgeons, New York	3	111	111	100	111	..	412	113	Willard C. Rappleye, M.D., Dean	39
40	Cornell University Medical College, New York	3	86	72	81	83	..	322	83	Joseph C. Hinsey, Ph.D., Dean	40
41	New York Medical College, Flower and Fifth Avenue Hospitals, New York	3	120	105	122	111	..	458	112	J. A. W. Hetrick, M.D., President and Dean	41
42	New York University College of Medicine, New York	3	121	109	137	119	..	486	120	Currier McEwen, M.D., Dean	42
43	University of Rochester School of Medicine and Dentistry, Rochester	3‡	67	68	67	67	..	269	60	George H. Whipple, M.D., Dean	43
44	Syracuse University College of Medicine, Syracuse	3	54	50	41	37	..	182	84§	H. G. Weiskotten, M.D., Dean	44
	NORTH CAROLINA										
45	Duke University School of Medicine, Durham	90 sem. hrs.	72	62'	68	67	..	269	67	Wilburt C. Davison, M.D., Dean	45
46	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	3	48	37	49	38	..	172	33	C. C. Carpenter, M.D., Dean	46
	OHIO										
47	University of Cincinnati College of Medicine, Cincinnati	3	87	84	77	81	..	329	82	Stanley Dorst, M.D., Dean	47
48	Western Reserve University School of Medicine, Cleveland	90 sem. hrs.	80	84	81	79	..	324	79	Joseph T. Wearn, M.D., Dean	48
49	Ohio State University College of Medicine, Columbus	3	83	91	72	77	..	323	77	Charles A. Doan, M.D., Dean	49
	OKLAHOMA										
50	University of Oklahoma School of Medicine, Oklahoma City	3	85	58	62	70	..	275	70	J. P. Gray, M.D., Dean	50
	OREGON										
51	University of Oregon Medical School, Portland	3	74	61	71	71	..	277	69	D. W. E. Baird, M.D., Dean	51
	PENNSYLVANIA										
52	*Hahnemann Medical College and Hospital of Philadelphia	3	103	108	115	133	..	459	132	Charles L. Brown, M.D., Dean	52
53	Jefferson Medical College of Philadelphia	3	160	142	153	151	..	606	151	William H. Perkins, M.D., Dean	53
54	Temple University School of Medicine, Philadelphia	3	127	100	128	116	..	471	114	William N. Parkinson, M.D., Dean	54
55	University of Pennsylvania School of Medicine, Philadelphia	3	123	108	127	136	..	494	132	Isaac Starr, M.D., Dean	55
56	Woman's Medical College of Pennsylvania, Philadelphia	3	48	34	34	35	..	151	35	Marion Fay, Ph.D., Dean	56
57	University of Pittsburgh School of Medicine, Pittsburgh	2	86	75	75	83	..	319	83	William S. McEllroy, M.D., Dean	57
	SOUTH CAROLINA										
58	Medical College of the State of South Carolina, Charleston	3	60	50	53	50	..	213	50	Kenneth M. Lynch, M.D., Dean	58
	TENNESSEE										
59	University of Tennessee College of Medicine, Memphis	2	164	109	104	135	..	512	173	O. W. Hyman, Ph.D., Dean	59
60	Meharry Medical College, Nashville	2	67	44	60	58	..	229	117§	Michael J. Bent, M.D., Dean	60
61	Vanderbilt University School of Medicine, Nashville	Degree	53	44	53	43	..	193	43	Ernest W. Goodpasture, M.D., Dean	61
	TEXAS										
62	Southwestern Medical College of the Southwestern Medical Foundation, Dallas	3	61	51	50	52	..	214	86§	William L. Hart, M.D., Dean	62
63	University of Texas School of Medicine, Galveston	3	105	69	81	89	..	344	80	Chauncey D. Leake, Ph.D., Vice President; D. Bailey Calvin, Ph.D., Dean of Students	63
64	Baylor University College of Medicine, Houston	3	85	67	67	71	..	290	71	W. H. Moursund, M.D., Dean	64
	UTAH										
65	University of Utah School of Medicine, Salt Lake City	3	d { 46 ..	40 ..	32 ..	36 32	.. ..	154 32	35 } ..	Richard H. Young, M.D., Dean	65
	VERMONT										
66	University of Vermont College of Medicine, Burlington	3	40	40	44	31	..	155	33	William Eustis Brown, M.D., Dean	66
	VIRGINIA										
67	University of Virginia Department of Medicine, Charlottesville	3	71	62	61	69	..	263	67	Harvey E. Jordan, Ph.D., Dean	67
68	Medical College of Virginia, Richmond	3	84	61	87	84	..	316	83	Harvey B. Haag, M.D., Dean	68
	WISCONSIN										
69	University of Wisconsin Medical School, Madison	3	82	60	64	61	..	267	60	William S. Middleton, M.D., Dean	69
70	Marquette University School of Medicine, Milwaukee	3	c { 94 73	78 93	85 87	87 57	.. ..	344 310	57 } ..	A. F. Berens, S.J., Regent	70
	Totals 1946-1947		6,037	5,127	5,537	5,658	478	22,369	6,349		
	Totals—Additional Classes		278	265	230	326	104	1,102	40		
	Grand totals		6,315	5,392	5,767	5,984	582	23,471	6,389		

Beginning Dates for Additional Classes

	Freshman	Sophomore	Junior	Senior
a	....	....	....	10-46
b	1-47	1-47	1-47	1-47
c	1-47	1-47	1-47	1-47
d	....	....	....	1-47
e	3-46	3-46	3-46	3-46

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* On probation.

† 90 semester hours for veterans.

‡ Two years for veterans.

§ Figures are for two graduating classes and include senior students reported in 1946 Educational Number.

Intern enrolment not included in total column.

Only five medical schools in the United States had 500 or more students enrolled, excluding those in the intern year. Illinois with 635 students had the largest enrolment. Jefferson had 606, Northwestern 517, Tennessee 512 and Michigan 500.

Eight schools in this country had enrolments under 200: Woman's Medical had 151 students, Vermont 155, Bowman Gray 172, Syracuse 182, Albany 183, Utah 186, Vanderbilt 193 and Alabama 197 The figures for Utah and Alabama include the two senior classes that were in session during 1946-1947.

In Canada the largest enrolment occurred at Toronto with 573. This number does not include 338 students in the premedical years The smallest enrolment in Canada was at Alberta, with 155 students

In the schools of the basic medical sciences in this country the total enrolment was 429. Mississippi with 86 students and North Carolina with 79 students had the largest enrolments. Dartmouth with 34 students had the smallest enrolment

In table 11, enrolments in the various classes in the medical and basic science schools in the United States are given for each academic session since 1930-1931 Compared with the figures for 1945-1946 there were 504 more freshmen, 175 fewer sophomores, 16 more juniors and 339 more seniors enrolled in 1946-1947.

It is of considerable interest to compare the size of the freshman classes for 1946-1947 in the various medical schools with the freshman enrolments reported by each school for 1941-1942, the last prewar year. In four schools the figures were exactly the same In thirty-five schools the 1946-1947 freshman enrolment was greater and in thirty-seven schools it was less Comparative figures are not available for one school, Southwestern Medical College, which was not founded until 1943.

TABLE 8—*Approved Medical Schools in Canada*

	Name and Location of School	1948 Premedical Requirement by Years	Students by Classes, 1946-1947: First Premedical Year	Second Premedical Year	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year	Totals†	1946 Graduates Not Reported in 1946 Edue No and 1947 Graduates to June 30, 1947	Executive Officer	
	ALBERTA													
1	University of Alberta Faculty of Medicine, Edmonton	3	..	.	42	37	44	32	..	..	155	21	John J Ower, M D, Dean	1
	MANITOBA													
2	University of Manitoba Faculty of Medicine, Winnipeg	2	..	..	70	62	60	64	..	63	256	63	A T Mathers, M D, Dean	2
	NOVA SCOTIA													
3	Dalhousie University Faculty of Medicine, Halifax	2	..	.	59	50	41	36	..	28	189	28	H G Grant, M D, Dean	3
	ONTARIO													
4	Queen's University Faculty of Medicine, Kingston	1	..	61	56	52	48	41			258	41	G Spencer Melvin, M D, Dean	4
5	University of Western Ontario Faculty of Medicine London	2			100		57	41	34	..	232	34	J B Collip M D, Dean	5
6	University of Toronto Faculty of Medicine, Toronto	1	195	143	162	154	127	130	.	..	911	124	J A MacFarlane, M B, Dean	6
	QUEBEC													
7	McGill University Faculty of Medicine, Montreal	3	..	..	116	131	116	99	..	.	462	92	Frederick Smith, M D, Dean	7
8	University of Montreal Faculty of Medicine, Montreal	Degree	..	..	117	85	88	99	..	79	389	79	Edmond Dubé, M D, Dean	8
9	Laval University Faculty of Medicine, Quebec	Degree			180	135	109	89			513	85	Charles Vezina, M D, Dean	9
	Totals		195	204	902	706	693	631	34	170	3,365	567		

† Intern enrolment not included in total column

TABLE 9—*Approved Schools of the Basic Medical Sciences in the United States and Canada*

	Name and Location of School	1948 Premedical Requirement by Years	Students by Classes, 1946-1947: Freshman	Sophomore	Total	Executive Officer	
	MISSISSIPPI						
1	University of Mississippi School of Medicine, University	3	a 26 29	31	57 29	David S Pankratz, M D Dean	1
	MISSOURI						
2	University of Missouri School of Medicine, Columbia	3	39	34	73	Dudley S Conley, M D, Dean	2
	NEW HAMPSHIRE						
3	Dartmouth Medical School, Hanover	3 & degree	24	10	34	Rolf C Syvertsen, M D, Dean	3
	NORTH CAROLINA						
4	University of North Carolina School of Medicine, Chapel Hill	3	48	31	79	W Reece Berryhill, M D, Dean	4
	NORTH DAKOTA						
5	*University of North Dakota School of Medicine, Grand Forks	3	23	26	49	Alfred H Lawton, M D, Dean	5
	SOUTH DAKOTA						
6	*University of South Dakota School of Medical Sciences, Vermillion	3	29	22	51	Donald Slaughter, M D, Dean	6
	WEST VIRGINIA						
7	West Virginia University School of Medicine, Morgantown	3	31	26	57	Edward J Van Liere, M D, Dean	7
	CANADA						
8	University of Saskatchewan School of Medical Sciences, Saskatoon	2	24	26	50	W S Lindsay, M B, Dean	8
	Totals 1946-1947		244	206	450		
	Totals Additional Class		29		29		
	Grand totals		273	206	479		

* On probation
a Beginning date of additional freshman class January 1947

Of the thirty-five schools with increased freshman enrolments, the increase was less than 10 per cent in twenty-one and 10 per cent or greater in fourteen. Of the thirty-seven schools with decreased enrolments, the decrease was less than 10 per cent in twenty-five and 10 per cent or more in twelve.

It should be noted that prior to 1942-1943 the totals shown in table 11 are somewhat higher than the sum of the figures for the various classes. This discrepancy resulted from the inability of certain schools to classify strictly their students into the conventional graded classes.

TABLE 10.—*Total Enrolments by Classes in the Medical and Basic Science Schools in the United States and Canada, 1946-1947*

Students in the required intern year are not included

	Freshmen	Sophomores	Juniors	Seniors	Total	Total Preceding Session
70 Medical Schools (U. S.)	6,037	5,127	5,537	5,668	22,369	22,691
5 Medical Schools (U. S.) additional classes....	278	268	230	326	1,102	.....
7 Basic Science Schools (U. S.)	220	180	.....	.....	400	525
1 Basic Science School (U. S.) additional class..................	29	.....	.....	.....	29	.....
Totals (U. S.)........	6,564	5,575	5,767	5,994	23,900	23,216
9 Medical Schools (Canada)	902	706	693	631	2,932*	2,523†
1 Basic Science School (Canada)	24	26	.....	.....	50	47
Totals (Canada).....	926	732	693	631	2,982*	2,570†
Grand totals (U.S and Canada)	7,490	6,307	6,460	6,625	26,882	25,786

* Does not include 300 premedical and 34 fifth year students.
† Does not include 263 premedical and 40 fifth year students.

TABLE 11.—*Students in the Medical and Basic Science Schools in the United States, 1931-1947*

Students in the required intern year are not included

	Freshman	Sophomore	Junior	Senior	Total
1930-1931..............	6,456	5,538	5,080	4,908	21,982
1931-1932..............	6,260	5,462	4,932	4,885	22,135
1932-1933..	6,426	5,479	5,017	4,948	22,466
1933-1934..............	6,457	5,571	4,988	4,937	22,799
1934-1935..............	5,356	5,624	5,142	4,905	22,888
1935-1936..............	6,605	5,478	5,230	5,020	22,564
1936-1937..	5,910	5,269	5,140	5,158	22,095
1937-1938............ .	5,791	5,225	4,986	5,076	21,587
1938-1939....	5,764	5,160	4,947	4,921	21,302
1939-1940..............	5,794	5,177	4,921	4,894	21,271
1940-1941..............	5,837	5,254	4,969	4,849	21,379
1941-1942..............	6,218	5,406	5,087	4,942	22,031
1942-1943..............	6,425	5,828	5,278	5,100	22,631
1943-1944...	6,561	6,071	5,640	5,257	23,529
1944 (second session).	6,648	6,140	6,084	5,794	24,666
1944-1945..............	6,523	5,979	5,700	5,826	24,028
1945-1946..............	6,060	5,750	5,751	5,655	23,216
1946-1947*.............	6,564	5,575	5,767	5,994	23,900

* Includes additional classes.

In table 12 is shown the total number of students in the United States taking a required intern year and the total number of students taking such work for each of the academic years since 1930-1931.

Veterans in Medical Schools

Of the 23,900 students enrolled during 1946-1947 in the medical schools and schools of the basic medical sciences in the United States, 13,308, or 55.6 per cent, were veterans. Forty-six of the veterans were women. In table 13 is shown the composition of the student bodies for each of the medical schools and schools of the basic medical sciences in the United States for 1946-1947. These figures are recapitulated by classes in table 15.

The highest percentage of veterans was in the freshman class, of which veterans comprised 62.8 per cent of the students enrolled. The percentage of veterans for the other classes were sophomores 53.7 per cent, juniors 48.9 per cent, seniors 55.9 per cent.

With respect to the scholastic performance of veterans in the 1946-1947 freshman class, twenty-three schools reported that the veterans did better work than the nonveterans, fifty-one schools reported no significant difference between the work of the veterans and nonveterans, one school reported that the nonveterans did better work, and two schools were unable to express an opinion.

Almost the same distribution of opinion obtained with respect to the comparison of the freshmen veterans with the freshmen of prewar years. Twenty-six schools reported that the veterans were better students, forty-six could find no difference, three schools said that the prewar freshmen were better students and two schools were unable to comment on the question.

While the opinions expressed by several schools were based on impressions rather than on statistical data, it would seem clear that the veterans are proving to be capable students.

TABLE 12.—*Students in the Required Intern Year in the United States, 1931-1947*

1930-1931..	1,025
1931-1932.....	1,057
1932-1933..	1,166
1933-1934...............................	1,181
1934-1935..	1,233
1935-1936..	1,213
1936-1937..	1,255
1937-1938..........................	1,132
1938-1939..	1,152
1939-1940..	1,152
1940-1941..	1,058
1941-1942..	767
1942-1943..................................	680
1943-1944..	451
1944 (second session).............................	447
1944-1945..	452
1945-1946..	488
1946-1947*......	582

* Includes additional class.

Distribution of Students by Sex

In table 14 the students enrolled in all the medical and basic science schools in the United States and Canada during the academic year 1946-1947 are classified according to sex. The same table also classifies according to sex the graduates of the four year schools during the period June 1, 1946 to June 30, 1947.

The number of men enrolled totaled 24,874 and the number of women 2,441. Four schools had no women students: Georgetown, St. Louis, Dartmouth and Jefferson. One school, the Woman's Medical College, had no men students.

Table 16 gives the numbers and percentages of women medical students and graduates in the United States since 1905. In 1946-1947 there were 2,183 women students, or 9.1 per cent of the total students enrolled. This is the highest absolute as well as relative number of women medical students in the United States on record. The highest percentage of women was in the freshman class, in which women students numbered 11.1 per cent. In 1944-1945 there were only seven schools in addition to the Woman's Medical College that had more than 30 women enrolled. In 1945-1946 there were seventeen and in 1946-1947 there were twenty-four. In Canada, Toronto had 112 women students.

TABLE 13.—*Enrolment of Veterans and Nonveterans in the Medical and Basic Science Schools in the United States, 1946-1947*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Medical College of **Alabama**	90	49	139	1	17	18	157
University of **Arkansas**	126	107	233	0	15	15	248
University of **California**	187	58	245	1	38	39	284
College of Medical Evangelists	76	219	295	0	29	29	324
University of Southern California	170	72	242	0	14	14	256
Stanford University	155	57	212	0	28	28	240
University of **Colorado**	132	87	219	1	21	22	241
Yale University, **(Connecticut)**	162	37	199	0	27	27	226
Georgetown University, **(Dist. of Columbia)**	158	208	366	0	0	0	366
George Washington University	172	114	286	2	26	28	314
Howard University	93	137	230	1	36	37	267
Emory University, **(Georgia)**	77	118	195	0	14	14	209
University of Georgia	156	112	268	0	15	15	283
Loyola University, **(Illinois)**	109	153	262	0	24	24	286
Northwestern University	345	146	491	0	26	26	517
University of Chicago	122	83	205	0	25	25	230
University of Illinois	292	274	566	2	67	69	635
Indiana University	227	141	368	1	27	28	396
State University of **Iowa**	196	71	267	0	24	24	291
University of **Kansas**	158	98	256	1	30	31	287
University of Louisville, **(Kentucky)**	141	178	319	0	13	13	332
Louisiana State University	148	124	272	1	40	41	313
Tulane University of Louisiana	243	188	431	0	35	35	466
Johns Hopkins University, **(Maryland)**	110	153	263	0	36	36	299
University of Maryland	182	123	305	2	27	29	334
Boston University, **(Massachusetts)**	152	71	223	1	20	21	244
Harvard Medical School	348	124	472	0	18	18	490
Tufts College Medical School	240	121	361	1	38	39	400
University of **Michigan**	263	172	435	1	64	65	500
Wayne University	134	86	220	0	10	10	230
University of **Minnesota**	105	210	315	1	40	41	356
University of **Mississippi**	42	12	54	0	3	3	57
University of **Missouri**	45	22	67	0	6	6	73
St. Louis University	304	150	454	0	0	0	454
Washington University	163	167	330	0	37	37	367
Creighton University, **(Nebraska)**	113	106	219	1	14	15	234
University of Nebraska	188	112	300	0	14	14	314
Dartmouth Medical School, **(New Hampshire)**	30	4	34	0	0	0	34
Albany Medical College, **(New York)**	113	43	156	0	27	27	183
Long Island College of Medicine	280	78	358	1	39	40	398
University of Buffalo	170	87	257	0	19	19	276
Columbia University	277	112	389	0	53	53	442
Cornell University	206	77	283	2	37	39	322
New York Medical College	194	202	396	0	62	62	458
New York University	256	168	424	0	62	62	486
University of Rochester	208	31	239	1	29	30	269
Syracuse University	107	47	154	2	26	28	182
University of **North Carolina**	48	21	69	2	8	10	79
Duke University	195	60	255	0	14	14	269
Bowman Gray School of Medicine	106	54	160	1	11	12	172
University of **North Dakota**	29	18	47	0	2	2	49
University of Cincinnati, **(Ohio)**	148	146	294	0	35	35	329
Western Reserve University	230	68	298	2	24	26	324
Ohio State University	143	154	297	0	26	26	323
University of **Oklahoma**	211	39	250	1	24	25	275
University of **Oregon**	188	65	253	0	24	24	277
Hahnemann Medical College, **(Pennsylvania)**	278	138	416	0	43	43	459
Jefferson Medical College	333	273	606	0	0	0	606
Temple University	252	167	419	1	51	52	471
University of Pennsylvania	205	253	458	0	36	36	494
Woman's Medical College	0	0	0	2	149	151	151
University of Pittsburgh	187	104	291	0	28	28	319
Medical College of **South Carolina**	132	68	200	0	13	13	213
University of **South Dakota**	42	5	47	0	4	4	51
University of **Tennessee**	202	290	492	2	18	20	512
Meharry Medical College	96	106	202	0	27	27	229
Vanderbilt University	71	110	181	0	12	12	193
Southwestern Medical College, **(Texas)**	144	49	193	1	20	21	214
Baylor University	168	102	270	1	19	20	290
University of Texas	235	96	311	0	33	33	344
University of **Utah**	107	36	143	2	9	11	154
University of **Vermont**	80	55	135	1	19	20	155
University of **Virginia**	193	56	249	0	14	14	263
Medical College of Virginia	220	65	285	0	31	31	316
West Virginia University	26	19	45	0	12	12	57
University of **Wisconsin**	168	55	223	2	42	44	267
Marquette University	197	116	313	0	31	31	344
Totals	12,599	8,077	20,676	42	2,051	2,093	22,769
Additional Classes							
Medical College of Alabama	13	24	37	0	3	3	40
University of Louisville	188	118	306	1	18	19	325
University of Minnesota	167	160	327	3	35	38	365
University of Mississippi	26	1	27	0	2	2	29
University of Utah	20	12	32	0	0	0	32
Marquette University	229	83	312	0	28	28	340
Totals	643	398	1,041	4	86	90	1,131
Grand totals	13,242	8,475	21,717	46	2,137	2,183	23,900

Table 14.—*Distribution of Students and Graduates by Sex in the United States and Canada, 1946-1947*

	Students		Graduates	
	Men	Women	Men	Women
Medical College of **Alabama**	139	18	20	1
University of **Arkansas**	233	15	101	4
University of **California**	245	29	124	11
College of Medical Evangelists	295	29	85	5
University of Southern California	242	14	64	2
Stanford University	212	28	115	6
University of **Colorado**	219	22	52	3
Yale University, **(Connecticut)**	189	27	58	5
Georgetown University, **(Dist. of Columbia)**	306	0	89	0
George Washington University	286	28	74	5
Howard University	230	37	117	9
Emory University, **(Georgia)**	195	14	65	0
University of Georgia	268	15	62	4
Loyola University, **(Illinois)**	262	24	70	6
Northwestern University	491	26	153	3
Univ. of Chicago	205	25	57	5
University of Illinois	566	60	311	14
Indiana University	268	28	94	4
State University of **Iowa**	267	24	71	3
University of **Kansas**	256	31	66	7
University of Louisville, **(Kentucky)**	319	13	87	0
Louisiana State University	272	41	68	7
Tulane University of Louisiana	431	35	121	4
Johns Hopkins University, **(Maryland)**	263	36	74	5
University of Maryland	305	29	93	4
Boston University, **(Massachusetts)**	223	21	51	3
Harvard Medical School	472	18	131	0
Tufts College Medical School	301	39	98	5
University of **Michigan**	435	65	133	7
Wayne University	220	10	58	4
University of **Minnesota**	315	41	104	5
University of **Mississippi**	54	3	..	..
University of Missouri	67	6	..	..
St. Louis	451	0	130	0
Washingto	320	37	91	6
Creighton	219	15	55	2
University of Nebraska	200	14	74	3
Dartmouth Med. School, **(New Hampshire)**	31	0	..	..
Albany Medical College, **(New York)**	156	27	40	3
Long Island College of Medicine	358	40	91	4
University of Buffalo	257	19	144	3
Columbi	389	53	108	5
Cornell	283	39	77	6
New Yo	306	62	100	12
New York	424	62	114	6
University	239	30	63	3
Syracuse	154	28	78	6
University of North Carolina	69	10	..	..
Duke	255	14	66	1
Bowm	160	12	35	3
Univer	47	2	..	..
Univer	294	35	72	10
Weste	298	20	70	3
Ohio S	297	26	72	5
Unive	250	25	68	2
University of Oregon	253	24	65	4
Hahnemann Med. College, **(Pennsylvania)**	416	43	123	9
Jefferson Medical College	606	0	151	0
Temple	410	52	105	9
Universi	458	36	129	3
Woman's	0	151	0	35
University of Pittsburgh	291	28	73	10
Medical College of South Carolina	200	13	48	2
University of South Dakota	47	4	..	..
University of Tennessee	402	20	169	4
Meharry Medical College	202	27	114	3
Vanderbilt University	181	12	43	0
Southwestern Medical College, (Texas)	193	21	80	6
University of Texas	311	33	81	9
Baylor University	270	20	67	4
University of Utah	143	11	33	2
University of Vermont	135	20	31	2
University of Virginia	249	14	66	1
Medical College of Virginia	285	31	79	4
West Virginia University	45	12	..	..
University	223	44	55	5
Marquette	313	31	84	3
University	140	15	18	3
University	233	23	60	3
Dalhousie	181	5	27	1
Queen's	244	14	39	2
University	219	13	31	3
University of Toronto	799	112	111	13
McGill University	427	35	83	9
University of Montreal	368	21	73	6
Laval University	501	12	84	1
University of Saskatchewan	42	8	..	..
Totals	23,633	2,351	6,536	380
Additional Classes				
Medical College of Alabama	37	3	37	3
University of Louisville	306	19	..	..
University of	327	38	..	..
University of	27	2	..	..
University of	32	0	..	..
Marquette University	312	28	..	..
Totals—Additional classes	1,041	90	37	3
Grand totals	24,874	2,441	6,573	383

It is clear from the figures in table 16 that the opportunity for women to study medicine in the United States has almost doubled in the past three years. A change in the direction of this trend, however, will probably be observed next year, since it is estimated that about 9 per cent of the entering classes in 1947 will be women, as compared with 11 per cent in the 1946 class.

Geographic Source of Freshman Students 1946-1947

In table 17 is indicated the residence of students in the first 1946-1947 freshman class of each medical and basic science school in the United States and Canada. In table 18 the same information is given for the students enrolled in the second freshman class for those schools that admitted two freshman classes during 1946-1947. It is admitted that the residence of certain students may be of brief duration, so that their real geographic source may not be revealed by their residence on entering medical school. On the other hand, the birth place of students is probably no better a criterion of geographic origin, since appreciable numbers of people have permanent residence elsewhere than in the states of their birth.

Table 15.—*Enrolment by Classes of Veterans and Nonveterans in the Medical and Basic Science Schools in the United States, 1946-1947*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen	3,890	1,659	5,549	38	670	708	6,257
Sophomores	2,834	1,783	4,617	4	686	690	5,307
Juniors	2,706	2,445	5,151	0	386	386	5,537
Seniors	3,169	2,190	5,359	0	309	309	5,668
Totals 1946-1947	12,599	8,077	20,676	42	2,051	2,093	22,769
Additional Classes							
Freshmen	219	64	283	3	21	24	307
Sophomores	150	90	240	1	27	28	268
Juniors	115	93	208	0	22	22	230
Seniors	159	151	310	0	16	16	326
Totals—Additional classes	643	398	1,041	4	86	90	1,131
Grand totals	13,242	8,475	21,717	46	2,137	2,183	23,900

Table 16.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,150	5.1	241	4.6
1944	1,176	5.0	239	4.7
1944 (Second session)	1,141	4.6	252	4.9
1945 (to June 30)	1,352	5.6	262	5.1
1946 (to May 31)	1,868	8.0	242	4.2
1947 (to June 30)*	2,183	9.1	342	5.4

* Includes additional classes.

Included in table 17 are 964 students in Canada. This figure is somewhat higher than the freshman

TABLE 17.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 District of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa	15 Kansas	Marginal Number
1	*Medical College of Alabama*	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
2	University of Arkansas School of Medicine	..	..	81	..	..	..	..	..	..	1	..	..	..	..	..	2
3	University of California Medical School	..	..	..	70	..	..	..	..	..	..	..	..	..	..	..	3
4	College of Medical Evangelists	..	..	1	26	..	..	..	..	3	..	2	..	..	1	..	4
5	University of Southern California School of Medicine	..	2	..	57	..	..	..	..	1	..	..	..	..	..	..	5
6	Stanford University School of Medicine	..	2	..	47	1	1	..	..	..	2	..	1	..	..	..	6
7	University of Colorado School of Medicine	..	..	..	..	61	..	..	..	..	..	..	..	..	..	..	7
8	Yale University School of Medicine	..	..	..	3	..	12	..	1	..	1	..	1	2	..	..	8
9	Georgetown University School of Medicine	..	1	..	3	1	6	..	8	1	..	..	..	..	..	..	9
10	George Washington University School of Medicine	..	..	..	4	..	..	..	21	..	..	1	1	..	1	1	10
11	Howard University College of Medicine	1	..	1	3	..	1	..	15	1	2	..	1	..	..	..	11
12	Emory University School of Medicine	1	..	..	1	..	..	..	..	17	70	..	..	1	..	..	12
13	University of Georgia School of Medicine	..	..	..	..	..	..	..	..	..	76	..	..	..	..	..	13
14	Loyola University School of Medicine	..	1	..	3	..	2	..	..	..	1	..	43	2	..	..	14
15	*Northwestern University Medical School*	..	..	..	6	..	..	..	..	1	..	3	48	6	2	4	15
16	University of Chicago, The School of Medicine	..	1	..	3	..	1	..	..	1	..	1	28	1	2	1	16
17	University of Illinois College of Medicine	1	..	..	4	..	..	..	..	..	..	..	156	..	1	..	17
18	Indiana University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	125	..	..	18
19	State University of Iowa College of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	90	..	19
20	*University of Kansas School of Medicine*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	68	20
21	University of Louisville School of Medicine	..	..	..	..	..	1	..	..	2	1	..	2	9	1	..	21
22	Louisiana State University School of Medicine	2	..	..	2	..	..	..	..	..	1	..	..	..	..	..	22
23	Tulane University of Louisiana School of Medicine	10	..	..	..	..	1	..	..	10	..	..	4	1	1	1	23
24	Johns Hopkins University School of Medicine	..	..	..	8	..	1	..	1	1	..	..	1	2	1	..	24
25	University of Maryland School of Medicine	..	..	..	5	..	3	1	1	2	..	..	2	..	..	..	25
26	Boston University School of Medicine	..	..	..	2	1	2	..	1	..	..	..	..	..	..	..	26
27	Harvard Medical School	1	1	1	7	1	1	..	..	3	1	..	10	1	1	1	27
28	Tufts College Medical School	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	28
29	University of Michigan Medical School	..	..	..	..	..	..	..	..	..	2	..	1	1	..	..	29
30	Wayne University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	30
31	University of Minnesota Medical School	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	31
32	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	St. Louis University School of Medicine	..	..	..	8	2	..	..	..	3	..	..	13	3	2	2	34
35	Washington University School of Medicine	..	..	1	2	1	..	..	..	..	..	1	10	3	1	1	35
36	Creighton University School of Medicine	..	1	..	9	5	1	..	..	..	..	1	..	2	13	4	36
37	University of Nebraska College of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	37
38	Dartmouth Medical School	..	..	..	2	..	3	..	..	1	..	..	..	..	..	1	38
39	Albany Medical College	..	..	..	1	..	2	..	..	..	..	..	1	1	..	..	39
40	Long Island College of Medicine	..	..	..	4	..	3	..	..	..	..	..	..	..	..	..	40
41	University of Buffalo School of Medicine	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	41
42	Columbia University College of Physicians and Surgeons	1	1	..	2	..	4	..	1	1	..	..	..	..	..	..	42
43	Cornell University Medical College	..	..	..	..	..	6	1	2	1	1	2	..	..	..	..	43
44	New York Medical College	..	1	..	1	..	13	..	..	..	..	..	..	1	..	..	44
45	New York University College of Medicine	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	45
46	University of Rochester School of Medicine and Dentistry	..	..	..	5	..	2	..	..	..	1	1	1	2	..	..	46
47	Syracuse University College of Medicine	..	..	..	2	..	1	..	..	..	1	..	..	..	..	..	47
48	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	48
49	Duke University School of Medicine	1	..	..	6	..	..	..	1	5	1	..	1	..	..	1	49
50	Bowman Gray School of Medicine	..	..	..	3	..	..	..	1	2	1	..	..	..	..	..	50
51	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	University of Cincinnati College of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	3	..	..	52
53	Western Reserve University School of Medicine	..	..	..	..	..	2	..	..	..	..	..	2	..	..	..	53
54	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	54
55	University of Oklahoma School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55
56	University of Oregon Medical School	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	56
57	Hahnemann Medical College	1	1	..	2	..	1	1	..	..	..	..	..	..	1	..	57
58	Jefferson Medical College of Philadelphia	1	..	..	2	..	..	..	1	1	..	1	..	..	..	..	58
59	Temple University School of Medicine	..	..	..	2	1	2	2	2	7	..	..	..	..	2	..	59
60	University of Pennsylvania School of Medicine	..	..	..	1	1	2	1	..	2	1	1	..	..	..	..	60
61	Woman's Medical College of Pennsylvania	1	..	..	6	1	2	..	..	..	..	..	2	2	..	..	61
62	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62
63	Medical College of the State of South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	63
64	University of South Dakota School of Medical Sciences	..	..	..	1	..	..	..	..	..	..	..	..	..	5	..	64
65	University of Tennessee *College of Medicine*	1	..	4	1	..	..	..	..	3	1	..	2	..	..	..	65
66	Meharry Medical College	1	..	1	2	..	..	..	..	9	1	..	3	1	..	1	66
67	Vanderbilt University School of Medicine	3	..	1	3	..	1	..	..	3	..	..	1	..	..	..	67
68	Southwestern Medical College	..	..	..	2	..	2	..	..	..	..	..	..	1	..	..	68
69	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	69
70	Baylor University College of Medicine	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	70
71	University of Utah School of Medicine	..	2	..	1	..	..	..	..	..	..	3	..	..	1	..	71
72	University of Vermont College of Medicine	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	72
73	University of Virginia Department of Medicine	..	..	..	..	..	..	1	..	2	1	..	..	1	..	..	73
74	Medical College of Virginia	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	74
75	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	75
76	University of *Wisconsin Medical School*	..	2	..	5	1	..	..	1	..	..	1	4	2	..	..	76
77	Marquette University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	77
78	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	78
79	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79
80	Dalhousie University Faculty of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	80
81	Queen's University *Faculty of Medicine*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	81
82	University of Western Ontario Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82
83	University of Toronto Faculty of Medicine	..	..	..	2	..	..	..	..	1	..	..	1	..	..	..	83
84	McGill University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	84
85	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	85
86	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	86
87	University of Saskatchewan School of Medical Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	87
	Total	82	17	91	336	78	92	7	57	88	128	20	349	174	129	83	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

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* Figures are for students in beginning premedical year.

† Figures are for first freshman class for those schools admitting two classes.

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	
Marginal Number	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82	2
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72	3
4	..	..	..	3	..	2	1	1	..	..	..	..	..	..	1	2	..	..	2	2	2	1	..	..	..	4	..	..	..	..	8	..	..	..	3	10	4	79	4
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6	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	2	..	..	61	6
7	..	..	..	..	..	2	..	..	..	1	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	70	7
8	..	..	..	..	5	..	..	1	..	..	..	..	..	2	..	16	..	..	..	..	1	..	1	..	..	..	1	1	..	..	1	..	..	..	..	..	..	49	8
9	1	..	1	6	5	..	..	..	..	..	..	..	1	16	..	28	..	..	1	..	1	18	..	..	..	..	..	..	..	2	..	..	..	..	3	..	1	101	9
10	..	..	..	16	1	1	..	..	1	1	..	..	..	2	2	8	..	..	3	..	1	3	2	..	..	..	..	..	..	8	1	2	..	..	1	..	..	82	10
11	..	2	..	2	2	1	..	2	1	..	..	..	..	3	..	7	1	..	..	..	..	4	..	..	..	2	1	..	..	4	..	1	..	..	1	..	11	70	11
12	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	..	2	3	..	..	..	..	..	..	..	..	..	..	60	12
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76	13
14	..	1	..	..	1	1	..	..	1	1	..	..	..	..	..	6	..	..	6	..	..	5	..	..	..	..	1	..	..	..	..	..	1	..	5	..	1	87	14
15	1	..	..	..	..	3	1	..	1	2	1	..	..	1	4	..	..	1	3	5	1	..	..	..	1	..	7	1	..	..	8	..	11	..	3	1	1	127	15
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17	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	167	17
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19	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	93	19
20	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	74	20
21	44	..	..	..	..	1	..	1	..	..	..	..	..	2	..	5	1	..	7	..	..	4	..	..	..	1	..	..	..	1	..	..	1	1	3	..	1	89	21
22	..	81	..	..	..	..	..	5	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	95	22
23	4	24	..	1	..	..	..	12	4	..	..	..	..	2	1	10	..	..	1	3	..	4	..	2	..	1	13	..	..	2	..	2	..	1	5	..	6	123	23
24	..	..	1	7	3	1	2	2	1	..	1	1	..	5	..	10	2	..	..	1	..	9	..	..	..	..	3	..	..	3	3	3	..	..	1	..	2	76	24
25	..	..	..	55	..	..	..	..	..	..	..	1	..	3	..	3	1	..	1	..	..	4	..	..	..	..	..	..	..	1	..	5	..	..	2	..	..	90	25
26	..	..	3	..	38	1	..	..	..	..	..	..	2	1	..	12	..	..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	68	26
27	..	..	1	1	17	2	1	..	2	..	..	..	1	2	..	17	2	..	7	1	2	8	..	..	..	..	2	..	1	2	4	1	3	..	1	1	5	113	27
28	..	..	4	..	78	..	..	..	..	..	..	..	3	..	..	1	..	..	..	..	..	..	15	..	..	..	..	..	1	..	..	..	..	..	..	..	1	111	28
29	1	..	..	..	2	90	1	..	1	..	..	..	..	1	1	4	1	..	5	..	..	1	..	1	..	..	..	..	..	..	1	..	..	..	1	..	..	115	29
30	..	..	..	..	..	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	65	30
31	..	..	..	..	1	..	70	..	..	1	..	..	..	..	..	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	83	31
32	..	..	..	..	..	..	..	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	26	32
33	..	..	..	..	..	..	1	..	38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39	33
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35	2	..	..	..	..	1	..	1	34	1	..	..	..	2	..	4	..	..	3	1	..	1	..	..	..	..	5	..	..	..	5	..	2	..	3	..	1	86	35
36	..	..	..	..	..	1	2	..	4	1	12	..	..	1	..	4	..	..	1	1	..	..	..	..	..	..	..	1	..	..	3	..	..	..	5	1	1	74	36
37	..	..	..	..	..	..	..	..	..	..	87	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	93	37
38	..	..	..	..	4	..	..	..	..	..	..	..	2	5	..	2	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	38
39	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	39	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51	39
40	..	..	..	..	2	..	..	..	..	..	..	..	..	14	..	81	..	..	..	2	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	1	110	40
41	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	59	..	..	..	..	..	3	..	1	..	..	..	..	1	..	..	..	..	..	3	..	..	70	41
42	1	..	..	1	6	..	1	..	..	..	1	..	..	17	..	61	..	..	1	..	..	2	1	..	..	..	2	..	..	..	2	..	..	..	2	..	3	111	42
43	1	..	..	..	4	..	..	..	..	..	..	..	..	15	..	40	..	..	3	..	..	5	..	..	..	..	..	1	..	1	1	..	..	..	2	..	..	86	43
44	..	..	..	1	2	..	..	..	..	..	..	..	..	19	..	75	..	..	1	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	120	44
45	..	..	..	..	..	1	..	..	..	..	..	..	..	12	..	102	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	121	45
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50	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	2	29	..	2	1	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	48	50
51	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	23	51
52	7	..	..	..	..	3	..	..	..	..	1	..	..	1	..	1	..	..	63	..	..	3	..	..	..	..	..	..	..	..	..	3	..	..	1	..	..	87	52
53	1	..	..	..	1	1	..	..	..	..	..	..	..	2	..	7	..	1	61	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	80	53
54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	83	54
55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	85	55
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57	..	..	..	1	1	..	..	..	..	..	..	..	..	12	..	27	..	..	4	..	..	47	..	1	..	..	..	..	..	..	..	..	..	..	2	..	1	103	57
58	..	..	..	2	3	..	2	..	..	..	..	..	..	21	..	4	..	..	6	..	1	99	6	..	..	..	..	2	..	..	1	4	..	..	3	..	..	160	58
59	..	..	..	1	2	1	2	..	..	1	..	..	1	11	..	5	..	..	4	..	..	67	1	..	..	1	1	..	..	..	1	1	3	1	5	..	..	127	59
60	1	..	2	..	2	..	..	..	..	..	..	..	..	8	..	6	4	..	1	..	..	73	..	..	..	1	6	2	..	1	2	1	1	..	2	..	1	123	60
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62	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	86	62
63	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..	..	..	..	..	..	60	63
64	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	..	1	..	..	1	..	..	..	..	1	..	..	29	64
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67	2	..	..	..	..	..	1	5	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	23	3	1	..	..	..	..	..	..	..	1	..	53	67
68	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	2	47	..	..	..	..	..	..	..	1	..	..	61	68
69	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	105	..	..	..	..	..	..	..	..	..	..	105	69
70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	78	..	..	..	..	..	..	..	..	..	..	85	70
71	..	..	..	..	..	..	..	1	..	2	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	33	..	..	..	..	..	..	..	..	..	46	71
72	..	..	4	..	2	..	..	..	..	..	..	..	..	1	..	6	..	..	..	..	..	..	..	..	..	..	..	..	24	..	..	..	..	..	..	..	..	40	72
73	1	..	..	2	..	..	..	..	..	..	..	..	..	2	..	5	2	..	1	..	..	3	..	1	..	1	..	..	..	45	..	1	..	..	2	..	..	71	73
74	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	1	7	..	1	..	1	..	1	1	..	1	..	..	..	59	..	5	..	..	3	..	..	84	74
75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	31	75
76	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	76	..	..	1	..	82	76
77	..	..	..	..	1	6	5	..	..	1	..	..	..	1	..	8	..	..	8	..	1	1	..	..	1	..	..	..	..	..	2	..	40	..	4	..	1	96	77
78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	..	42	78
79	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	70	..	70	79
80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52	7	59	80
81	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	61*	81
82	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	100	82
83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	195	..	195*	83
84	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	99	7	116	84
85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	113	4	117	85
86	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	177	1	180	86
87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	..	24	87
	74	118	17	104	196	195	97	77	128	15	106	5	15	208	15	768	111	26	318	115	56	489	40	92	23	154	300	45	28	139	77	68	143	10	89	951	73	7,221	
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

enrolment figures given in preceding tables because table 17 employs the figure for the first class of premedical students at Queen's and Toronto, since these students are already registered in those schools.

In table 19 is shown the number of first year medical students from each state per hundred thousand inhabitants. *This calculation* employed *only the* enrolment statistics in table 17.

In previous years the statistics have shown that states with and states without medical schools have sent almost identical proportions of their populations to medical schools. This year the figures reveal a somewhat different situation. The twelve states without medical schools had an average of 3.5 students per hundred thousand of population in the 1946-1947 freshman classes of the various medical schools, while those states with medical schools had an average of 5.2 students per hundred thousand of population enrolled as freshmen. The explanation for this change is not immediately apparent. It does not appear to be the result of any general change in the policy of schools with respect to the admission of nonresident students.

Table 18.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 District of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa	15 Kansas	Marginal Number
1	University of Louisville School of Medicine	..	..	..	1	..	..	..	..	2	..	1	1	4	..	1	1
2	University of Minnesota Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2
3	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
4	Marquette University School of Medicine	..	..	..	3	..	1	1	..	..	..	2	2	..	..	..	4
	Totals	0	0	0	4	0	1	1	0	2	0	3	3	4	1	1	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

A comparative study of resident and nonresident enrolments in 1941-1942, the last prewar year, and in 1946-1947 reveals no especial differences. In 1941-1942 the enrolment of the state and municipal institutions included 17.4 per cent out of state students. In the same year the enrolment of private medical schools included 52.9 per cent nonresident students.

Of the freshman students admitted by state and municipal schools in 1946-1947, 14.8 per cent were nonresidents. In the private schools 51.4 per cent of the freshmen were out of state students.

It is to be hoped that, if a trend is developing for medical schools to restrict admission to residents of their own states, it will be temporary and short lived. While it is easy to understand the pressures that might lead to the adoption of such a policy, it must be seriously questioned whether such a practice would be in the best interest of the schools themselves or of medical education in the country as a whole. If the admission of nonresident students should be narrowly restricted, it would undoubtedly encourage the development of medical schools in a number of states which are not in a position to establish and maintain acceptable medical schools.

In table 20 is recapitulated the number of resident students, students from other states, students from United States territories and possessions, Canadian students and foreign students enrolled in the first 1946-1947 freshman class in each school in the United States and Canada.

Six schools did not admit any out of state students in 1946-1947. They were Alabama, Georgia, Mississippi, South Carolina, Texas and West Virginia. These schools have frequently enrolled only residents in the past, although in the preceding two years every medical school in the United States accepted some out of state students. Seven schools admitted only 1 or 2 out of state students. Twenty-three schools admitted more nonresident than resident students, and one school admitted an equal number of residents and nonresidents.

Of the 964 beginning students in Canada, only 13 came from the United States. Nineteen freshman students from Canada were enrolled in the schools in this country It is apparent that the extensive exchanges of students between these neighbor countries which existed before the war have not yet been reestablished.

There were 88 freshman students from the territories and possessions of the United States, none of whom were enrolled in Canada. A total of 73 students from foreign countries was enrolled in freshman classes, 54 in the schools of this country and 19 in Canada. The largest number, 11, was enrolled in the Howard University College of Medicine.

Graduates

The last columns of tables 7 and 8 give the number of graduates from each medical school in the United States and Canada respectively from June 1, 1946 to June 30, 1947. During this period there were 6,389 graduates in the United States and 567 in Canada. As already mentioned, ten schools in the United States graduated two classes during this period.

The total students and graduates in the United States per academic year since 1905 are reported in table 21. The 6,389 graduates reported for this year are the most reported for any single academic year since the Council on Medical Education and Hospitals was established. It should be noted, however, that this number includes the students graduated during a thirteen month period in which ten schools graduated two classes. Three schools had more than 150 graduates in one class: Tennessee 173, Illinois 164 and Jefferson 151.

Seven schools graduated fewer than 50 students in one class: Alabama 21, Vermont 33, Utah 35, Woman's Medical 35, Syracuse 37, Bowman Gray 38 and Albany 43.

In Canada the most graduates were at Toronto, 124, and the fewest at Alberta, 21, and Dalhousie, 28.

Of the total of 6,956 graduates in the United States and Canada during 1946-1947, 62.8 per cent possessed a baccalaureate degree. The number and percentage of graduates with a baccalaureate degree from each medical school are shown in table 22.

Production of Physicians, 1937-1942 and 1942-1947

It is now possible to give a final figure for the total number of additional physicians produced as a consequence of wartime acceleration and increased enrolments in medical schools. In measuring this aspect of the war effort of medical schools the additional physicians who will be trained by the schools that are continuing to admit classes on an accelerated program in peacetime are not included.

In the five prewar years from July 1, 1937 to June 30, 1942, 25,818 physicians were graduated from the medical schools in the United States. In the five years from July 1, 1942 to June 30, 1947, 32,877 physicians have been graduated. The accelerated program thus made possible the training of 7,059 additional physicians, an increase of 27.3 per cent over the number of physicians trained during the five year period immediately preceding the adoption of the accelerated program.

in the United States in Additional Classes, 1946-1947

Marginal Number	16 Kentucky	17 Louisiana	18 Maine	19 Maryland	20 Massachusetts	21 Michigan	22 Minnesota	23 Mississippi	24 Missouri	25 Montana	26 Nebraska	27 Nevada	28 New Hampshire	29 New Jersey	30 New Mexico	31 New York	32 North Carolina	33 North Dakota	34 Ohio	35 Oklahoma	36 Oregon	37 Pennsylvania	38 Rhode Island	39 South Carolina	40 South Dakota	41 Tennessee	42 Texas	43 Utah	44 Vermont	45 Virginia	46 Washington	47 West Virginia	48 Wisconsin	49 Wyoming	50 U. S. Terr. & Poss.	51 Canada	52 Foreign	Total	Marginal Number
1	60	..	..	..	..	1	1	..	2	..	..	..	..	2	..	2	1	..	7	1	..	2	..	..	..	1	..	..	..	..	1	2	..	..	2	..	..	95	1
2	..	..	..	..	..	1	98	..	..	3	1	..	..	..	..	..	..	1	1	..	..	1	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	110	2
3	..	..	..	..	..	..	..	29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29	3
4	..	..	..	..	1	3	1	1	..	..	..	..	..	2	..	11	1	..	2	..	..	2	..	..	1	..	..	..	..	..	1	..	32	1	5	..	..	73	4
	60	0	0	0	1	5	100	30	2	3	1	0	0	4	0	13	2	1	10	1	0	5	0	0	2	1	0	0	0	0	3	2	32	2	7	0	0	307	
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		

During the period July 1, 1937 to June 30, 1942, when 25,818 physicians were graduated, 18,988 physicians were reported to have died. Thus the net increase in the number of physicians for that five year period was 6,920. During the five year period July 1, 1942 to June 30, 1947, 32,877 physicians were graduated and 16,435 died, making a net increase of 16,442.

Required Internships

The medical schools requiring an internship for the degree of Doctor of Medicine are shown in table 23. There are six schools in the United States and four in Canada with this requirement. There has been no change in this list in the past four years. In the academic year 1946-1947 there were 582 students of schools in this country and 170 from Canadian schools in the required year of internship training or research. In table 12 is shown for each year since 1930-1931 the number of students from schools of the United States in the required intern year.

States requiring the internship for licensure are listed in table 24. There are twenty-three such states. In addition the District of Columbia, Alaska, Hawaii, Puerto Rico, the Canal Zone and the homeopathic boards of Arkansas and Connecticut require an internship for licensure.

The licensing boards listed in table 24 have returned to the prewar requirement of a one year internship but will continue to accept the nine month wartime internship. Several of the boards, however, require an additional three months of training in a military or civilian hospital.[1]

The licensing boards of Delaware, Hawaii, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, Utah, Washington and Wisconsin require the internship to be a rotating service.

Five states (Connecticut, Maryland, Missouri, Texas and Virginia) whose laws do not require internship withhold the licenses of candidates from schools requiring an internship for the degree of Doctor of Medicine until the internship is completed. In these states the examination may be taken at any time after completion of the medical school course.

Some states require an internship of graduates from schools abroad and applicants for reciprocity or endorsement.

Table 19.—*Ratio of Freshman Medical Students[1] to State Populations, Academic Year 1946-1947*

Number of students per 100,000 of population[2] in the medical and basic science schools of the United States

*Maine	2.2	Ohio	4.6
*Delaware	2.4	Oregon	4.6
*Arizona	2.7	Massachusetts	4.7
*New Mexico	2.8	Louisiana	4.8
[illegible]	2.9	[illegible]	4.8
[illegible]	2.9	[illegible]	4.8
[illegible]	3.1	Maryland	4.9
North Carolina	3.2	*New Jersey	5.0
*Montana	3.3	North Dakota	5.0
[illegible]	3.3	Indiana	5.1
[illegible]	3.6	Kansas	5.1
[illegible]	3.6	[illegible]	5.1
[illegible]	3.7	[illegible]	5.2
[illegible]	3.7	[illegible]	5.3
[illegible]	3.7	[illegible]	5.3
[illegible]	3.8	[illegible]	5.4
[illegible]	3.9	[illegible]	5.7
[illegible]	3.9	[illegible]	5.7
*Idaho	4.0	[illegible]	6.1
Georgia	4.0	[illegible]	6.1
*Wyoming	4.1	Colorado	7.0
South Dakota	4.1	Utah	7.3
Texas	4.4	Nebraska	8.8
Virginia	4 5	Vermont	9.0
Illinois	4.5		

* States with no medical or basic science school.

1. Calculations based on one freshman class for each school.

2. 1945 estimate of U. S. Census Bureau.

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[1] J. A. M. A. **134:** *274* (May 17) 1947.

Table 20.—*Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1946-1947* *

	Home State	Other State	Terr. & Poss.	Canadian	Foreign	Totals
Medical College of **Alabama**	52	0	0	0	0	52
University of **Arkansas**	81	1	0	0	0	82
University of **California**	70	2	0	0	0	72
College of Medical Evangelists	26	36	3	10	4	79
University of Southern California	57	9	0	0	1	67
Stanford University	47	12	2	0	0	61
University of **Colorado**	61	9	0	0	0	70
Yale University **(Connecticut)**	12	37	0	0	0	49
Georgetown University **(Dist. Columbia)**	8	92	3	0	1	104
George Washington University	21	60	1	0	0	82
Howard University	15	43	1	0	11	70
Emory University **(Georgia)**	30	30	0	0	0	60
University of Georgia	76	0	0	0	0	76
Loyola University **(Illinois)**	48	33	5	0	1	87
Northwestern University	48	75	2	1	1	127
Univ. of Chicago	28	29	2	0	2	61
University of Illinois	156	11	0	0	0	167
Indiana University	125	3	1	0	0	129
State University of **Iowa**	90	3	0	0	0	93
University of **Kansas**	68	5	0	0	1	74
University of Louisville **(Kentucky)**	44	41	3	0	1	89
Louisiana State University	81	11	2	0	1	95
Tulane University of Louisiana	24	91	5	0	6	126
Johns Hopkins University **(Maryland)**	7	66	1	0	2	76
University of Maryland	55	33	2	0	0	90
Boston University **(Massachusetts)**	38	29	1	0	0	68
Harvard Medical School	17	89	1	1	5	113
Tufts College Medical School	78	32	0	0	1	111
University of **Michigan**	90	24	1	0	0	115
Wayne University	61	1	0	0	0	65
University of **Minnesota**	70	12	0	1	0	83
University of **Mississippi**	26	0	0	0	0	26
University of **Missouri**	38	1	0	0	0	39
St Louis University	29	74	5	0	3	111
Washington University	34	48	3	0	1	86
Creighton University **(Nebraska)**	12	55	5	1	1	74
University of Nebraska	87	6	0	0	0	93
Dartmouth Med. School **(New Hampshire)**	2	22	0	0	0	24
Albany Medical College **(New York)**	39	12	0	0	0	51
Long Island College of Medicine	81	28	0	0	1	110
University of Buffalo	59	8	3	0	0	70
Columbia University	61	45	2	0	3	111
Cornell University	40	44	2	0	0	86
New York Medical College	75	44	0	0	1	120
New York University	102	19	0	0	0	121
University of Rochester	27	39	0	1	0	67
Syracuse University	39	13	1	0	1	54
University of **North Carolina**	38	10	0	0	0	48
Duke University	14	58	0	0	0	72
Bowman Gray School of Medicine	29	19	0	0	0	48
University of **North Dakota**	21	1	1	0	0	23
University of Cincinnati **(Ohio)**	63	23	1	0	0	87
Western Reserve University	61	19	0	0	0	80
Ohio State University	82	1	0	0	0	83
University of **Oklahoma**	85	0	0	0	0	85
University of **Oregon**	42	28	3	1	0	74
Hahnemann Med. College **(Pennsylvania)**	47	53	2	0	1	103
Jefferson Medical College	99	58	3	0	0	160
Temple University	67	55	5	0	0	127
University of Pennsylvania	73	47	2	0	1	123
Woman's Medical College	15	31	0	0	2	48
University of Pittsburgh	85	1	0	0	0	86
Medical College of **South Carolina**	60	0	0	0	0	60
University of **South Dakota**	19	9	1	0	0	29
University of **Tennessee**	103	57	3	1	0	164
Meharry Medical College	10	57	0	0	0	67
Vanderbilt University	23	29	0	1	0	53
Southwestern Medical College (Texas)	47	13	1	0	0	61
Baylor University	78	7	0	0	0	85
University of Texas	105	0	0	0	0	105
University of **Utah**	33	13	0	0	0	46
University of **Vermont**	24	16	0	0	0	40
University of **Virginia**	45	24	2	0	0	71
Medical College of Virginia	59	22	3	0	0	84
West Virginia University	31	0	0	0	0	31
University of **Wisconsin**	76	5	0	1	0	82
Marquette University	40	51	4	0	1	96
University of Alberta (Canada)	0	0	0	42	0	42
University of Manitoba	0	0	0	70	0	70
Dalhousie University	0	0	0	52	7	59
Queen's University	0	1	0	60	0	61
University of Western Ontario	0	0	0	100	0	100
University of Toronto	0	0	0	195	0	195
McGill University	0	10	0	99	7	116
University of Montreal	0	0	0	113	4	117
Laval University	0	2	0	177	1	180
University of Saskatchewan	0	0	0	24	0	24
Totals	4,012	2,037	88	951	73	7,221

* Does not include students in additional classes.

The hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association (see pages 1323 to 1334, this issue) are generally acceptable in those states requiring an internship for licensure.

Premedical Training

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved medical schools since 1918 has been two years of college training, and in 1938 three years was recommended. With the exception of California the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college. The two year requirement became effective in Connecticut on July 1, 1947. In November 1942 the Council on Medical Education and Hospitals recommended that, for the duration of the war, premedical education, including satisfactory courses in physics, biology and inorganic and organic chemistry, be included within two calendar years. Such a program was adopted by practically all medical schools in the United States and Canada. There is a distinct trend toward the reestablishment of the prewar requirements. There are now seventy-five of the eighty-seven schools requiring three or more years of premedical work.

Table 21.—*Schools, Students and Graduates in the United States, 1905-1946*

Students in the required intern year are not included

	Schools	Students *	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,891	3,536
1920	85	13,798	3,047
1921	83	14,466	3,186
1922	81	15,635	2,529
1923	80	16,960	3,120
1924	79	17,728	3,562
1925	80	18,200	3,974
1926	79	18,840	3,962
1927	80	19,662	4,035
1928	80	20,545	4,262
1929	76	20,878	4,446
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,799	5,035
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,095	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089
1940	77	21,271	5,097
1941	77	21,379	5,275
1942	77	22,031	5,163
1943	76	22,631	5,223
1944	77	23,529	5,134
1944 (second session)	77	24,666	5,169
1945 (to June 30)	77	24,028	5,136
1946 (to May 31)	77	23,216	5,826
1947 (to June 30)†	77	23,900	6,389

* Includes figures for schools of the basic medical sciences.
† Includes figures for additional classes.

An important problem regarding premedical requirements is posed by the many excellent educational opportunities at the high school and college level afforded men in the armed forces. The American Council on Education recommends the awarding of certain high school and college credits for courses taken by members of the armed forces (*a*) by correspondence through the "Armed Forces Institute," which operates in collaboration with colleges and universities, and (*b*) in classroom work in various schools operated for men and women in the armed services.

The American Council on Education, representing higher education in this country, has carefully evaluated the content and quality of the many courses given in both these categories. It has issued the "Guide to the Evaluation of Educational Experiences in the Armed Forces" to assist colleges desiring to do so to award ,

TABLE 22.—*Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, June 1, 1946 to June 30, 1947*

	Graduates	Degrees	Per Cent with Degrees
Medical College of **Alabama**	61*	33	54 1
University of **Arkansas**	108	76	70 4
University of **California**	135	120	88 9
College of Medical Evangelists	90	58	64 4
University of Southern California	66	49	74 2
Stanford University	121	121	100 0
University of **Colorado**	55	42	76 4
Yale University, **(Connecticut)**	63	48	76 2
Georgetown University, **(Dist. of Columbia)**	89	33	37.1
George Washington University	79	49	62 1
Howard University	126	88	69 8
Emory University, **(Georgia)**	55	25	45 5
University of Georgia	66	35	53 0
Loyola University, **(Illinois)**	76	34	44.7
Northwestern University	156	112	71.8
University of Chicago	62	54	87.1
University of Illinois	325	294	90 5
Indiana University	98	70	71 4
State University of **Iowa**	74	34	45 9
University of **Kansas**	73	43	58 9
University of Louisville, **(Kentucky)**	87	33	37 9
Louisiana State University	75	32	42 7
Tulane University of Louisiana	125	44	35 2
Johns Hopkins University, **(Maryland)**	79	60	75.9
University of Maryland	97	34	35.1
Boston University, **(Massachusetts)**	57	30	52 6
Harvard Medical School	131	66	50 4
Tufts College Medical School	103	69	67 0
University of **Michigan**	140	107	76 4
[illegible]	62	37	59 7
[illegible]	109	109	100 0
[illegible]	130	63	48 5
Washington University	97	48	49 5
Creighto	55	29	52.7
Universi	77	54	70.1
Albany	43	26	60 4
Long Island College of Medicine	95	41	43 2
University of Buffalo	147	60	40 8
Columbi	113	85	75 2
Cornell	83	53	63 9
New Yo	112	66	58 9
New Yo	120	83	69.2
Universi	66	43	65.2
Syracus	84	58	69 0
Duke U	67	19	28 4
Bowma	38	16	42 1
Univers	82	42	51.2
Wester	79	45	57.0
Ohio St	77	72	93 5
Univers	70	29	41.4
University of **Oregon**	69	69	100 0
Hahnemann Med College, **(Pennsylvania)**	132	90	68.2
Jefferson Medical College	151	99	65.6
Temple University	114	70	60.7
University of Pennsylvania	132	65	49 2
Woman's Medical College	35	33	94 3
University of	83	69	83 1
Medical Colleg	50	39	78 0
University of	173	53	30 6
Meharry Medical College	117	79	67.5
Vanderb	43	42	97.7
Southwe	86	20	23 3
Baylor	90	45	50 0
Universi	71	33	46 5
University of **Utah**	35	29	82 9
University of **Vermont**	33	27	81 8
University of **Virginia**	67	41	61 2
Medical College of Virginia	83	57	68 7
University of Wisconsin	60	60	100 0
Marquette	87	47	54.0
Universit	21	20	95 2
Universit	63	26	41 2
Dalhousie	28	9	32 1
Queen's	41	11	26 9
Universit	34	4	11 8
University of Toronto	124	14	11.3
McGill University	92	77	83 7
University of Montreal	79	79	100 0
Laval University	85	85	100 0
Totals	6,956	4,369	62 8

* Includes additional class.

proper high school and college credit for specific courses taken in this program.

In addition to awarding credit for courses actually taken, as already described, there is a program for evaluating a veteran's learning experiences while in the armed forces by administering "general educational development tests" and awarding appropriate credit at the high school and college levels on the basis of the examination results, even though formal course work in the subject matter of the examination was *not taken* by the candidate. These are comprehensive examinations developed by the Armed Forces Institute and sponsored by the American Council on Education.

TABLE 23—*Medical Schools Requiring an Internship*

United States

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine *

Canada

University of Alberta Faculty of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

* Degree not withheld until internship completed.

The Council on Medical Education and Hospitals has agreed to these recommendations in principle in the following statement:

High School and College Credit for Veterans

A. Courses at the high school and college level have been offered to members of the armed forces,

1. by correspondence through the "Armed Forces Institute," which operates in collaboration with colleges and universities, and
2. in classroom work in various schools operated for men and women in the armed services.

The American Council on Education, representing higher education in this country, has carefully evaluated the content and quality of the many courses given in both these categories. It has issued the "Guide to the Evaluation of Educational Experiences in the Armed Forces" to assist colleges desiring to do so to award *proper high school and college credit for specific courses taken in this program.*

B. In addition to awarding credit for courses actually taken, as described in A, there is a program for evaluating a veteran's knowledge in a given field by administering "General Educational Development Tests" and awarding appropriate credit at the high school and college levels on the basis of the examination results, even though formal course work in the subject matter of the examination was not taken by the candidate. These are comprehensive examinations developed by the Armed Forces Institute and sponsored by the American Council on Education.

TABLE 24—*Medical Licensing Boards Requiring a One Year Internship* †

Alabama
*Delaware
District of Columbia
Idaho
Illinois
Iowa
Michigan
Montana
Nevada
New Hampshire
*New Jersey
New Mexico
*North Dakota
Oklahoma
Oregon
*Pennsylvania
*Rhode Island
South Dakota
*Utah
Vermont
*Washington
West Virginia
*Wisconsin
Wyoming

Alaska
Canal Zone
*Hawaii
Puerto Rico
Virgin Islands

† Some states require the internship from graduates of medical faculties abroad and from reciprocity or endorsement applicants.
* Internship must be rotating service.

C. The Council on Medical Education and Hospitals of the American Medical Association (*a*) has confidence in the American Council on Education and its "Guide to the Evaluation of Educational Experiences in the Armed Forces," in the Armed Forces Institute and in the General Educational Development tests and (*b*) wishes to support sound procedures permitting veterans to commence their education in civilian institutions at a level commensurate with their ability and knowledge. Therefore the Council has decided that approved medical schools desiring to accept students at the freshman level partially on the basis of high school or college awarded credit as described in A and B will not be in conflict with the Council's regulations and policies, except that college credit for science courses requiring laboratory work should not be allowed on this basis, nor should blanket credit be allowed for military service not based on courses or examinations. Specifically, a medical college may accept, in partial fulfilment of premedical requirements:

1. High school credits, based on

(*a*) Courses taken from the Armed Forces Institute or in service courses of the armed forces according to the "Guide to the Evaluation of Educational Experiences in the Armed Forces."

(*b*) Performance in the General Educational Development Tests; such credit may include the equivalent of a complete high school course.

2. College credits (except in science courses requiring laboratory work, or except blanket credits for military services not based on courses or examinations), based on

(*a*) Courses taken from the Armed Forces Institute or in service courses of the armed forces according to the "Guide to the Evaluation of Educational Experiences in the Armed Forces."

(*b*) Performance in the General Education Development Tests.

The licensing boards of all but four states have indicated that the awarding of premedical credits under this plan by approved medical schools as the equivalent of the required premedical training will satisfy the requirement for licensure.

The Army Specialized Training and Navy V-12 premedical programs called for less than two years of college training, but in both these programs the studies were continuous and provided for the student carrying more than the normal peacetime studies per semester. Both the Army and Navy programs provided for work well in excess of the sixty semester hours constituting the normal two academic years of medical study. The information received from those states whose licensure laws include specific premedical requirements seems to indicate that there should be no licensure difficulties encountered by students whose premedical work was taken under the Army Specialized Training or Navy V-12 or comparably accelerated civilian programs.

The 1947 Freshman Class

By June of this year the medical schools and schools of the basic medical sciences in the United States had already selected 6,252 students for admission in 1947. This group is composed of 4,399 male veterans (70 per cent), 1,301 other men (21 per cent) and 598 women (9 per cent). Forty-seven of the women are veterans.

These preliminary figures indicate that next year's freshman enrolment in medical schools in this country will be close to the figure for the peak year, the 1944 "second session," when 6,648 freshmen were enrolled. It would also appear that there will be more veterans in the 1947 freshman class than in the present year and somewhat fewer women.

By June a number of schools had already admitted more freshman students than they had admitted in any one session during the war years. In ten schools present figures indicate that the freshman classes in 1947-1948 will be at least 10 per cent larger than those enrolled in 1941-1942. In one school the scheduled freshman enrolment for 1947-1948 already exceeds the 1941-1942 figure by 30 per cent.

It is appropriate to comment at this place that certain schools have strengthened their faculties and increased their physical facilities sufficiently to enable them to increase their enrolments above the prewar level without impairing the quality of instruction. Unfortunately such justification for expanded enrolments does not exist for all the schools that are admitting an increased number of freshmen.

Fees

The eighty-seven medical schools in the United States and Canada have been arranged in six groups in table 25 according to tuition fees charged resident students for the session 1946-1947. The figures are based on the average tuition fee charged for the complete medical course and include such minor charges as those for matriculation, breakage, diploma and graduation.

An upward trend in tuition fees is still continuing. The average tuition fee for an academic year charged by medical schools in the United States in the past seven years has increased from $378 in 1940 to $459 in 1947. However, this is an increase of 21 per cent, which is considerably less than the increase in the costs of most services and commodities during the same period.

Thirty-three schools in the United States and five in Canada make an additional charge for nonresidents. These sums vary considerably in amount. The lowest charge is at Toronto, where nonresidents in the freshman class pay $5 a year and nonresidents in other classes pay $10. The highest nonresident fees are at Oklahoma ($350) and Louisiana ($400).

TABLE 25.—*Fees in Medical and Basic Science Schools in the United States and Canada, 1946-1947*

	Number of Schools
Under $99	0
$100 to 199	7
200 to 299	14
300 to 399	14
400 to 499	12
500 to 599	16
600 or over	24
Total	87

The Financing of Medical Schools

The budgets of the medical and basic science schools in the United States for the academic year 1947-1948 total somewhat more than $43,000,000. In reporting the figures from which this sum was compiled, the medical schools excluded, with a few partial exceptions, the costs of patient care in their teaching hospitals. Research grants from foundations, governmental agencies and other outside sources were also excluded.

The figures from some medical schools incorporated allowances for general university administration and plant maintenance. Other schools did not include one or both of these items. The lack of uniformity in reporting these costs, however, does not detract significantly from the validity of the total figure as a close approximation of the cost of operating the medical schools of this country for the coming year.

One other correction must also be applied. Four schools had only their budgetary figures for 1946-1947 available and the most recent figures that one school could provide were those for 1945-1946. Again, it is believed that these corrections would not alter the total significantly.

Of the total of $43,000,000 that will be needed to operate the medical schools of this country in the coming year, students' fees will provide no more than $12,000,000 and probably somewhat less. The remaining $31,000,000 will be obtained from income from endowments, general university funds, appropriations from tax funds, gifts and similar sources. The fact that only 28 per cent or less of the total cost of undergraduate medical education next year will be met by student fees is impressive evidence for the frequently repeated statement that income from tuition provides but a small fraction of the financial support required by medical schools.

Because there is a fourfold variation in size between the smallest and the largest medical schools in this country, a meaningful comparison of budgets can be made only by determining the expenditures per student for each school. Employing the enrolment statistics for 1946-1947, the latest complete figures available, the range of expenditures per student planned by the medical and basic science schools in this country for 1947-1948 is found to extend from $600 to over $5,000.

In table 26 the seventy-seven medical and basic science schools in the United States have been arranged in eight groups according to their anticipated expenditures per student for 1947-1948.

Table 26.—*Expenditures per Student by the Medical and Basic Science Schools in the United States, 1947-1948*

Excluding research funds from outside sources

	Number of Schools
$ 600 to 999	12[1]
1,000 to 1,499	22[2]
1,500 to 1,999	15
2,000 to 2,499	14
[illegible]	5
[illegible]	5
[illegible]	1
Over 5,000	3
Total	77

1. 1946-1947 expenditure for one school; 1945-1946 expenditure for one school.

2. 1946-1947 expenditures for three schools.

The figures from many schools indicate that in recent years there has been an appreciable increase in the operating funds that have been secured over and above student fees. Five schools, however, are still unable to provide from nonstudent sources as much as fifty cents for every dollar of tuition collected. Twelve other schools cannot yet match student fees dollar for dollar. It would seem clear that the schools in these two groups must be furnished with more adequate financial support if they are to offer training comparable in quality to that provided in the majority of the medical schools of this country.

Present figures indicate that the medical schools of this country will receive about $10,000,000 in grants from foundations, government agencies and other sources during the coming year. Most of these grants are primarily for research projects, although some are being given for the express purpose of improving instructional programs.

There is a wide range in the sums that will be obtained in the form of grants by the different schools. Several schools do not anticipate receiving any grants. At the other extreme, one school is receiving grants totaling more than $750,000 and five other schools are receiving total grants of $500,000 or more. In addition to these schools, twenty-one others are receiving grants ranging from $100,000 to $490,000 for the next academic year.

Medical Schools Affiliated with Veterans Administration Hospitals

Fifty-five of the four year schools and one of the basic science schools in the United States are now affiliated with one or more Veterans Administration hospitals. One school is affiliated with a Veterans Administration clinic and four schools are prepared to affiliate as soon as hospitals which are to be constructed in their vicinity are in operation.

While there is some variation in the scope of activity carried on by the various medical schools and in the responsibilities which they have assumed, all the schools have undertaken to develop and supervise educational programs of high quality for the residents in the hospitals with which they have affiliated. This program has greatly increased the attractiveness of the residencies in these hospitals for able young physicians and in many other ways has directly and indirectly brought about remarkable improvements in the quality of patient care rendered in these institutions.

As of June 1947, forty-five of the participating medical schools stated without qualification that the affiliation was operating in a satisfactory manner. Seven other schools expressed satisfaction with the program, but with qualifications. Five schools did not express an opinion about the operation of the program.

Basic Science Training for Residents

Each specialty board requires that candidates for certification demonstrate a sound knowledge of the basic medical sciences as they apply to the given specialty. Certain boards recommend or require that the candidate's preparation for certification include time spent in a formal course of study in one or more of the basic medical sciences.

The basic science departments of fifty-eight of the seventy medical schools in this country now offer some form of organized training for the residents of their own or affiliated hospitals. In some schools such training is limited to one or two subjects; in others courses are offered in all, or almost all, the basic medical sciences.

Eleven medical schools provide organized basic science training only for the residents of their own hospitals, eight offer such courses only for affiliated hospitals and thirty-nine admit to their courses both the residents of their own hospitals and those of affiliated institutions, including Veterans Administration hospitals.

During the past year the desirability of having medical schools increase their efforts to provide formal basic science training for residents has been questioned on two grounds. It has been urged that the most valuable form of basic science training for physicians seeking to perfect themselves in the practice of one of the branches of medicine is that which stresses the clinical application of the basic medical sciences. The opinion is widely held that such training is provided more effectively in the wards and laboratories of the hospitals that are training residents than it is in the classrooms or laboratories of a medical school.

The other important objection that has been raised against the development by medical schools of formal courses for residents is that most medical schools do not have the personnel or the physical equipment to provide satisfactory training for residents without impairing the quality of their undergraduate instruction.

In view of the general lack of enthusiasm for providing such courses which the medical schools displayed earlier this year, it is somewhat surprising to find that fifty-eight schools are now furnishing this type of training. The experience of these schools over the next several years should provide valuable information for determining how much responsibility it is desirable and advisable for medical schools to assume in this phase of graduate training.

New Medical Schools

One new medical school, the University of Washington School of Medicine, opened in Seattle during the past year. This school, which is planning the development of a four year program, admitted its first freshman class in the fall of 1946. During the coming academic year the school will have both a freshman and a sophomore class enrolled.

The development of new medical schools is being actively considered in several other states. In last year's Educational Number it was mentioned that every school of the basic medical sciences except Dartmouth had expansion to the full four year status under consideration. In the interval Mississippi and South Dakota have abandoned, at least for the present, plans for immediate expansion. Expansion has been authorized by law in North Carolina, North Dakota and Missouri. A final decision has not yet been reached in West Virginia.

The University of California has been authorized to develop a four year medical school in Los Angeles. Funds have been appropriated to initiate a building program, and a dean has been appointed.

The Florida legislature has authorized the University of Florida to establish a medical school at Gainesville. The University of Miami is also contemplating the development of a school of medicine.

Other universities that are reported to be actively considering the creation of medical departments are Rutgers and the University of Connecticut. In several other states preliminary discussions have been initiated concerning the advisability and desirability of founding new medical schools.

It would seem clear that a gradual expansion of the facilities for medical education in this country will occur during the next several years. It is essential that this expansion be carefully planned with respect to the ability of the sponsoring agencies to establish and maintain medical schools that will provide training of unquestioned quality. In the field of higher education there is no undertaking more expensive than the establishment of an acceptable medical school. The expansion of opportunities for training in medicine should also be guided by the accurately determined quantitative needs of this country for physicians.

Survey of Medical Education

The last comprehensive survey of medical education in this country was that conducted by the Council on Medical Education and Hospitals during the period 1934-1936. The findings of this survey and supplementary studies were published in 1940 in what has come to be known as the "Weiskotten report." This report proved to be of great value in providing specific information concerning the status of medical education in this country. It also led to the prompt correction of many of the deficiencies that were brought to light.

The Board of Trustees of the American Medical Association has now authorized the Council on Medical Education and Hospitals to conduct another comprehensive survey of medical education in this country. The Council will be joined in this survey by the Association of American Medical Colleges. Representatives of these two organizations are now developing plans for a survey designed to provide current, reliable information which can serve as a basis for further improvements and advances in medical education in this country.

APPROVED INTERNSHIPS, RESIDENCIES AND FELLOWSHIPS

Revision of Residency Standards

The standards governing the approval of residencies in specialties have recently been revised by the Council on Medical Education and Hospitals in cooperation with the American specialty boards. These new Essentials of Approved Residencies and Fellowships were officially adopted by the House of Delegates of the American Medical Association at its centennial session in Atlantic City in June 1947. Under the present standards approval of residency training programs may be extended in the following classifications:

1. Allergy
2. Anesthesiology
3. Cardiovascular Disease
4. Contagious Diseases
5. Dermatology and Syphilology
6. Gastroenterology
7. General Residency
8. Internal Medicine
9. Malignant Diseases
10. Neurological Surgery
11. Neurology
12. Obstetrics and Gynecology
13. Occupational Medicine
14. Ophthalmology
15. Orthopedic Surgery
16. Otolaryngology
17. Pathology
18 Pediatrics
19. Physical Medicine
20. Plastic Surgery
21. Proctology
22. Psychiatry
23. Pulmonary Diseases
24. Radiology
25. Surgery
26. Thoracic Surgery
27. Urology

In comparison with the 1939 revision it will be noted that four new classifications have been added to the residency list, namely allergy, gastroenterology, occupational medicine and proctology. On the other hand, the separate listing of residencies in epilepsy, mental deficiencies and traumatic surgery has been discontinued. Training programs in epilepsy and mental deficiencies would now fall under the classification of psychiatry and neurology, whereas those in traumatic surgery have been transferred either to general surgery or to orthopedic surgery. There has also been a change in terminology in several fields, giving a clearer definition of the scope and type of training involved. Residencies in cardiology have been changed to cardiovascular disease, those in communicable diseases to contagious diseases, mixed residencies to general residencies, physical therapy to physical medicine and tuberculosis to pulmonary diseases.

As in the previous revision, the present standards describe the general requirements applicable to all types of residency training, the special requirements pertaining to individual specialties, resident-intern relationships, the recording of credit in the biographic files of the American Medical Association and the procedures involved in the evaluation and approval of residency training programs. All sections have been fully revised, however, giving a clearer definition of the general and special requirements in each field, quantitative requirements in relation to clinical material, applied basic science instruction and board requirements in those fields in which certifying boards have been organized. New regulations have been included in several divisions which were not fully described in the previous Essentials. Under general requirements a section on Teaching and Investigation has been added as well as a comprehensive statement clarifying the requirements in regard to basic science training. While it is pointed out that a resident seeking certification should be able to apply the basic sciences of anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology to his special field, it is equally emphasized that "such training does not necessitate formal course work, specific assigned laboratory exercises or affiliation of the residency hospital with a medical school; it should be distinctly of an applied nature, closely integrated with the clinical experience of the resident."

The new Essentials of Approved Residencies and Fellowships, published elsewhere in this issue, will be reprinted and distributed to all approved hospitals, medical schools, specialty boards and other agencies concerned in the development and maintenance of educational services for resident physicians.

Residencies in Specialties

The number of approved residencies in civilian hospitals in the United States has increased by more than 100 per cent since 1941. The present total of 12,003 residencies as compared with 5,256 at the beginning of the war illustrates not only the tremendous expansion that has taken place in recent years but reflects also the generous cooperation and support of the large number of physicians, hospitals, medical schools and other agencies through whose efforts the development of additional residency training programs has been made possible. In 1941 the hospitals approved by the American Medical Association for the training of resident physicians totaled 610. This number has now increased to 1,017, including 9 hospitals of the Army, 16 of the Navy, 8 of the U. S. Public Health Service and 51

TABLE 27.—*Approved Internships, Assistant Residencies and Residencies—1947*

Hospitals approved for internships	764
Number of approved internships	8,539
Hospitals offering approved residencies in one or more specialties	1,017
Number of approved residency training programs	3,171
Total number of individual residencies offered	12,003

	Number of Internships§	Number of Assistant Residencies and Residencies Offered *																	
		Anes.	Derm. Syph.	Gen. Res.a	Int. Med.†	Neur. Psy.	Neur. Surg.	Ob. Gyn.	Oph. Otol.b	Orth. Surg.	Path.	Ped.	Phys. Med.	Plas. Surg.	Proct.	Rad.	Surg.‡	Uro.	Total Residencies
Alabama	56	2	1	11	11	..	2	7	2	4	5	6	..	..	..	3	11	2	67
Arizona	17	..	..	2	1	..	..	..	..	1	..	..	..	..	..	1	1	..	6
Arkansas	28	..	..	1	2	15	..	5	3	..	1	..	..	..	..	..	2	..	29
California	580	40	12	51	266	102	10	63	50	42	39	41	6	..	..	40	123	31	909
Colorado	74	..	1	7	19	26	..	4	3	8	12	15	3	..	..	8	8	1	115
Connecticut	185	33	..	6	38	31	5	17	3	7	6	7	..	..	..	8	23	3	187
Delaware	28	3	..	..	4	6	..	..	..	3	1	1	..	..	..	1	4	..	23
District of Columbia	158	16	2	3	55	15	..	29	10	6	12	34	..	..	..	12	35	3	232
Florida	49	..	.	1	7	..	2	2	..	2	1	..	..	..	..	1	9	2	27
Georgia	102	3	1	..	37	1	7	10	8	6	8	11	..	..	..	7	40	5	153
Idaho	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Illinois	684	29	13	21	163	116	15	120	63	23	70	55	5	2	1	52	117	18	924
Indiana	175	11	1	5	27	31	..	12	12	14	14	5	..	..	..	15	19	5	171
Iowa	64	10	2	2	12	8	..	8	14	9	6	7	..	..	..	11	19	8	116
Kansas	48	2	2	..	10	127	1	5	3	5	3	1	3	2	..	8	9	1	182
Kentucky	77	3	1	2	35	28	2	7	3	7	3	9	..	..	..	7	23	2	132
Louisiana	224	8	5	6	40	10	2	21	29	21	16	19	..	3	..	13	43	14	256
Maine	21	2	..	..	3	..	..	..	..	..	2	1	..	..	..	..	6	..	14
Maryland	278	..	7	..	80	42	7	53	17	9	12	16	..	..	1	14	87	6	351
Massachusetts	424	34	7	27	185	152	12	28	23	25	26	20	2	..	..	27	118	19	705
Michigan	365	5	13	19	185	65	3	55	33	16	19	47	..	2	1	33	186	17	700
Minnesota	152	32	17	12	186	42	11	28	35	31	17	37	8	4	8	27	173	18	686
Mississippi	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	4	..	7
Missouri	317	2	6	6	97	43	5	32	30	18	19	29	..	6	..	26	81	12	412
Montana	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Nebraska	55	..	..	3	8	14	1	2	1	3	5	1	..	..	..	3	5	..	46
Nevada	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
New Hampshire	9	..	..	5	3	1	..	..	..	..	2	..	..	..	..	1	..	..	12
New Jersey	386	7	..	..	40	11	..	24	8	9	16	4	..	2	..	6	24	6	160
New Mexico	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
New York	1,585	75	36	30	499	277	36	174	163	116	126	135	10	14	1	127	430	56	2,305
North Carolina	122	4	1	6	37	4	..	14	5	8	11	16	..	..	..	11	46	7	170
North Dakota	5	..	..	3	2	..	..	..	..	..	..	1	..	..	..	3	4	..	13
Ohio	432	15	12	13	183	41	9	72	24	24	37	52	1	..	4	42	185	13	727
Oklahoma	53	2	..	..	7	3	1	3	2	11	3	8	..	2	..	1	6	1	50
Oregon	68	6	1	..	25	2	3	7	7	9	9	3	3	..	..	7	11	4	97
Pennsylvania	786	34	17	4	122	126	7	53	49	29	67	57	1	3	17	58	113	22	779
Rhode Island	42	3	..	..	8	13	..	2	..	2	2	4	..	..	..	1	4	..	39
South Carolina	38	..	..	..	17	..	..	6	..	9	3	5	..	..	..	2	7	7	56
South Dakota	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee	144	16	..	2	23	..	6	22	10	22	12	18	..	..	..	17	42	8	198
Texas	212	14	12	7	50	49	1	28	7	20	12	26	..	..	..	15	51	5	297
Utah	44	3	..	..	18	..	..	8	..	..	1	2	..	..	..	4	7	..	43
Vermont	9	2	..	..	9	2	1	2	..	..	3	2	..	..	..	2	3	1	27
Virginia	127	..	6	16	48	24	7	11	17	11	3	8	1	..	..	11	32	10	205
Washington	124	..	..	4	22	14	..	4	2	7	3	1	..	..	..	4	17	..	78
West Virginia	40	..	..	17	14	..	..	1	..	4	2	..	..	..	..	..	12	..	50
Wisconsin	161	12	3	4	77	26	..	10	14	10	8	10	2	2	1	8	38	10	235
Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Individual residencies—1947	...	429	180	296	2,677	1,470	156	961	630	565	617	717	45	42	34	638	2,229	317	12,003
Approved residency programs—1947	...	131	66	94	512	241	58	292	149	226	269	180	24	16	11	296	466	140	3,171¶
Individual residencies—1941	...	121	78	183	1,126	497	36	442	441	200	332	393	5	8	..	250	1,007	137	5,256

* Includes fellowships.

† Includes 18 residencies in allergy, 19 in cardiovascular disease, 70 in contagious diseases and 360 in pulmonary diseases.

‡ Includes 94 residencies in malignant diseases and 66 in thoracic surgery.

¶ Number of residency programs in 992 hospitals approved for residency training (residency programs in 9 Army and 16 Navy hospitals not included).

§ Total internships 8,539 plus 64 in Canal Zone, Hawaii and Puerto Rico.

a. Approximately 500 additional general residencies available in hospitals approved for intern training which are likewise accredited for general residencies.

b. Includes 316 residencies in opthalmology and 314 in otolaryngology.

of the Veterans Administration. Expansion of residency training programs has occurred in all specialties. On a percentage basis the greatest increase is in the fields of anesthesiology, neurologic surgery, physical medicine and plastic surgery, excluding in this connection the divisions of allergy and proctology, which were not represented in the previous classification. Numerically the specialty of internal medicine predominates, with a total of 2,677 residencies as compared with 1,126 in the prewar period. General surgery increased from 1,007 to 2,229, psychiatry and neurology from 497 to 1,470, obstetrics and gynecology from 442 to 961, pediatrics from 393 to 717, radiology from 250 to 638, ophthalmology and otolaryngology from 441 to 630, pathology from 332 to 617 and orthopedic surgery from 200 to 565. Included in internal medicine are 18 residencies in allergy, 19 in cardiovascular disease, 70 in contagious diseases and 360 in pulmonary diseases, formerly classified as tuberculosis. Grouped with general surgery, on the other hand, are 66 residencies in thoracic surgery and 94 in malignant diseases. Neurology has 173 residencies, psychiatry 1,297.

While residency training is centered mainly in the specialty fields, it should be noted that many of the hospitals approved by the Council have established educational programs designed primarily to provide additional experience in preparation for general practice. These services, which are similar to second year rotating internships, are ordinarily classified as general or mixed residencies. At present 94 hospitals hold separate approval for general residency training and can accommodate 296 applicants. In addition, nearly 500 general residencies are available in the approved internship hospitals, all of which are likewise accredited for general residency training. The organization and maintenance of residencies of this type are an important development in providing opportunities for the training of physicians planning to practice general medicine. This is also in keeping with the development of general practice sections in hospitals as recommended by the Council on Medical Education and Hospitals of the American Medical Association.

Reference should be made to the accompanying table showing the number and classification of residencies now provided in 992 approved hospitals, excluding, however, the residency training programs of the Army and Navy. Comparative data have also been included on the number of residencies available in 1941. The hospitals of the Army, Navy, U. S. Public Health Service and Veterans Administration are taking an active part in the program of residency training and can accommodate over 2,000 resident physicians, as described in The Journal, April 12, 1947. These institutions are making steady progress in the development and organization of educational services, a large number of which have already received Council approval. Elsewhere in this issue is a full list of the residency training programs currently approved by the American Medical Association.

Approved Hospital Internships

The list of approved internships published in this issue of The Journal shows that there are within the continental limits of the United States 764 civilian hospitals approved by the American Medical Association for the training of interns. These institutions can accommodate 8,539 interns, as compared with an average yearly total of approximately 5,500 medical graduates. On direct comparison of the number of internships and senior medical students it would seem that the facilities for intern training greatly exceed the required need. It is found on closer study, however, that the size of the graduating class ordinarily does not determine the number of interns engaged in hospital training. In 1939, for example, when 7,765 internships were available, the approved hospitals employed 7,448 interns as compared with 5,089 medical graduates. A similar observation in 1940 gives further indication that under normal conditions a reserve supply of over 2,000 internships may be necessary to meet the needs of those who desire an additional year of general hospital experience.

In the possessions and territories of the United States there are 8 approved internship hospitals: 1 in the Canal Zone, 3 in Hawaii and 4 in Puerto Rico. These have facilities for the training of 64 interns. The Navy, which is training approximately 120 interns, is concentrating its educational service in 20 general hospitals approved by the Council. The Army has reestablished its intern training program and will accommodate approximately 100 interns in 8 Army general hospitals approved by the American Medical Association. The U. S. Public Health Service has facilities for 120 interns in 10 Marine hospitals.

The hospital internships have now returned to a peacetime status, maintaining as a general rule a minimum assignment of one year in accordance with the usual July to July schedule. A further extension of the internship to two years is under consideration in several hospitals in order that interns may obtain wider and more adequate experience in the general preparation for medical practice. The uniform plan for the appointment of interns is described in The Journal, April 12, 1947.

POSTGRADUATE COURSES FOR VETERAN AND CIVILIAN PHYSICIANS

An important aid to the physician desiring to keep abreast of the progress of medicine is the offering of continuation courses throughout the country. Since 1937 the Council on Medical Education and Hospitals has collected and published periodically lists of courses of a review and refresher nature. These listings include courses in a wide variety of fields in clinical medicine and in the basic sciences. The courses are for variable periods from a few days to several months. Some are concentrated full time courses and others are part time. In the June 14 and June 21 issues of The Journal more than eight hundred courses offered by numerous institutions and organizations are listed covering the period from July 1, 1947 to Jan. 15, 1948. The medical schools take a prominent part in presenting these courses. In addition, other agencies offering courses employ the facilities of the medical schools. The institutions and individuals participating in these programs are rendering a great service to the profession and to the physician veterans. Institutions offering this type of training are invited to announce such courses in these semiannual lists compiled by the Council.

These continuation or review courses do not ordinarily provide credit of any kind, as the courses are not designed to prepare men for board certification. Some opportunities are offered for review work in preparation for examinations in the specialties as given by the boards. They are applicable to the educational benefits provided physician veterans under the G. I. Bill of Rights.

In the following paragraphs mention is made of some of the recent and noteworthy developments in postgraduate education. An analysis of the courses offered during the period July 1, 1946 to July 1, 1947 is also presented.

Recent Developments

The Chicago Medical Society is expanding its services and plans to offer postgraduate courses open to physicians of the country. Two courses, one in cardiovascular diseases and another in gastroenterology, have already been scheduled.

The Illinois State Medical Society sponsors one day conferences in all parts of the state. They are arranged at the request of the secretary of the county medical society. These may consist of round table conferences and clinics in addition to speakers

The Department of Otolaryngology of the College of Medicine of the State University of Iowa has announced the presentation of a five day intensive course covering the specialties of otology, rhinology and laryngology.

The program of postgraduate instruction in Kansas is a joint undertaking of the state board of health, the state medical society and the University of Kansas School of Medicine

Tulane University School of Medicine offered a course of one week full time in obstetrics and gynecology designed for Latin American physicians.

The Mississippi State Board of Health will offer scholarships for courses in maternal and child health at Tulane University

The affiliation of the New York Post-Graduate Medical School and the New York Eye and Ear Infirmary with Columbia University has been discontinued During the year 1946-1947 the New York Post-Graduate School enrolled a total of 1,119 physicians, of whom 615 were physician veterans. Physicians were enrolled from forty-four states, the District of Columbia, two of the territories and thirty-six foreign countries This was the third largest enrolment in the school's history.

The county medical societies of New York State regularly schedule postgraduate lectures This instruction is presented as a cooperative endeavor between the medical society of the state and the state department of health.

The Medical Society of the State of Pennsylvania will, beginning Oct 7, 1947, inaugurate a program consisting of eight hours of didactic instruction one day a week for five weeks given by teachers from the various medical schools of the state This will be a continuous course for three years, offered twice a year. The forthcoming course will be offered in six towns, and four subjects are scheduled.

Meharry Medical College offers courses for Negro physicians

The American Academy of Ophthalmology and Otolaryngology offers home study courses through nine months corresponding to the school year Reading assignments are mailed each month followed by questions sent four weeks later The courses are of a basic nature and are usually taken by residents

Postgraduate Medicine, a monthly journal, was published beginning January 1947 by the Interstate Postgraduate Medical Association of North America. Much of the basic material consists of addresses presented at the annual meeting of this association, but it is expected that new material will be supplemented, originating in various postgraduate centers.

Analysis of Courses Offered in 1946-1947

In presenting this analysis of postgraduate courses which have been offered during the annual period July 1, 1946 to July 1, 1947 the statistical summaries are divided into three groups: short review courses, courses of more than five days' duration and, lastly, a group including clinical conferences, graduate assemblies, study courses and courses of a chautauqua nature.

Short Review Courses—Twenty-five states and the District of Columbia provided opportunities of less than five days' duration for physicians to continue professional study in or near their home communities These twenty-five states and the District of Columbia offered 239 courses as follows:

Alabama	2	Massachusetts	5	Oklahoma	10
California	26	Michigan	11	Oregon	1
Colorado	7	Minnesota	13	Pennsylvania	5
Connecticut	2	Missouri	1	South Carolina	2
District Columbia	1	Nebraska	1	Tennessee	1
Illinois	9	New Jersey	5	Texas	12
Iowa	4	New York	89	Virginia	4
Kansas	17	North Carolina	2	Wisconsin	5
Kentucky	2	Ohio	2		—
Totals					239

The subjects of these courses of less than five days' duration included:

Allergy
Anesthesiology
Arthritis
Biochemistry
Cardiovascular disease
Chest diseases
Dermatology and syphilology
Diabetes
Electrocardiography
Electroencephalography
Endocrinology
Endoscopy
Fractures
Gastroenterology
Hematology
Industrial health
Legal medicine
Malignant diseases
Medicine, general
Neurology and psychiatry
Obstetrics and gynecology
Ophthalmology
Orthopedic surgery
Otolaryngology
Otology
Pathology
Pediatrics
Physical medicine
Physiology
Proctology
Public health
Radiology
Surgery, general
Therapy
Urology
Venereal diseases

The courses varied in length from one session of one and one-half hours to five days' full time and consisted of organized courses, daily set clinics on patients in the wards and evening lectures, with emphasis on recent developments. The type of instruction was didactic, clinical or both The instructors were chosen from physicians practicing in the state in which the courses were offered as well as from out of state. Medical school faculties participated in 150 courses. The facilities used included hospitals, clinics, medical schools and hotels

These offerings were held in every month but August, the majority being given in January, April, September and October, while in 21 instances they were arranged at the convenience of the applicant. Thirty-seven courses were available for specialists only. Fees ranged from $3 to $200, the majority under $50. In 37 instances no fee was charged

The attendance reported for 205 courses was 16,274, while 34 did not indicate enrolment figures.

The value of this type of instruction to the busy practitioner is becoming more popular, since it enables him to obtain information regarding newer technics in medical practice without the necessity of prolonged absence from his practice.

Courses of More Than Five Days.—In centers where ample clinical facilities are available, 1,291 graduate courses of more than five days' duration were offered in thirty-one states and the District of Columbia during 1946-1947. These states and the number of courses which were given in each state are as follows:

Alabama	4	Louisiana	26	North Carolina	56
California	52	Maine	2	Ohio	7
Colorado	1	Maryland	13	Oregon	17
Connecticut	1	Massachusetts	59	Pennsylvania	56
District Columbia	52	Michigan	104	Tennessee	19
Florida	1	Minnesota	25	Texas	14
Georgia	10	Mississippi	3	Vermont	7
Illinois	176	Missouri	10	Virginia	10
Iowa	18	Nebraska	9	Washington	3
Kansas	10	New Jersey	7	Wisconsin	15
Kentucky	3	New York	501		
Totals					1,291

These courses, consisting of refresher courses of five or more days to intensive courses extending over one year and in 3 instances to three years, were offered in both the basic sciences and clinical subjects. Forty-six subjects were covered. While the majority of the courses were in various subjects, specific courses in general medicine were offered in 193 instances, surgery in 125, neurology and psychiatry in 101, obstetrics and gynecology in 104, ophthalmology in 92, pediatrics in 62, dermatology and syphilology in 45 and anatomy in 40. Fewer than five courses were given in 9 subjects.

The length of these courses varied from five days to one month for 517 courses. There were offered 307 courses ranging in length from one to four months and 69 from five to twelve months. There were 18 one year courses and 3 given for three years, while the remainder specified the length of the course in hours, sessions, seminars, semesters or quarters.

The description of these intensive courses indicated that instruction was both clinical and didactic. Instruction was both didactic and clinical for 668 courses, didactic only for 90 and clinical only for 126. The remainder did not specify the type of instruction.

In presenting these courses, medical school facilities were used for 783 courses, hospitals for 752 and clinics for 495. In many instances two or all three of these sources were used in presenting an individual course. Hotel and other facilities were used for 42 courses. One course was a home study course.

The faculties of medical schools served as instructors in 757 courses. Additional instructors were specialists in their field, chosen mainly (in 474 instances) from physicians residing within the state in which the course was given but including as well physicians from outside the state.

Courses were offered during every month last year, and in 206 instances they were arranged to suit the convenience of physician-students. There were 115 courses available for specialists only. Fees varied considerably, ranging from $1 to $1,000. In 53 instances no fee was charged.

The attendance reported for 1,137 of the 1,291 courses given in 1946-1947 was 23,062.

Sponsoring and Contributing Agencies.—One hundred and thirty-five agencies participated in the sponsoring of both the short review courses and the longer courses. These included 52 medical schools, 35 special societies, 16 hospitals, 14 state societies, 8 graduate schools, 6 county societies, 2 state health departments and 2 universities.

Twenty-one agencies, while not responsible for the development of these opportunities, were reported as contributing agencies. Grouped under special societies in addition to the national society in a given specialty are such agencies as the W. W. Kellogg Foundation, Commonwealth Fund, National Cancer Institute, Foundation for Vision and National Foundation for Infantile Paralysis.

Clinical Conferences, Graduate Assemblies, Study Courses, Chautauqua Courses.—In eleven states clinical conferences, graduate assemblies and study courses were held during 1946-1947. These opportunities varied in length from two sessions to two weeks, with the four day program being most common. Fourteen such meetings were conducted in these states. The majority surveyed topics in general medicine and surgery. Other subjects covered were cardiovascular disease, poliomyelitis, radiology, tumors and venereal diseases. In most instances the instruction was both didactic and clinical. The facilities of hospitals, clinics and medical schools were used. For this type of instruction a small registration fee was charged. The attendance numbered 17,914.

Table 28.—*Courses Offered and Attendance*

	1945-1946			1946-1947		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
Short review courses (five days or less)	154	128	4,140	239	205	16,274
Courses of less than a year and more than 5 days	1,070	1,043	19,991	1,291	1,137	23,062
Clinical conferences, graduate assemblies, study and chautauqua courses	52	52	21,824	21	21	20,475
Totals	1,276	1,223	45,955	1,551	1,363	59,811

In seven states (Arkansas, Massachusetts, Michigan, Nebraska, Oklahoma, Tennessee and Wisconsin) identical courses were offered in various centers throughout the state, ranging from three to twenty-five centers. Contributing agencies were medical schools, state medical societies, state health departments and private agencies. Instruction was both clinical and didactic Afternoons and evenings were most commonly employed by the instructors in presenting their subject. Last year this type of continuation training was offered in general medicine, cancer, gynecology, industrial health and psychiatry. No fee was larger than $10. The reported attendance was 2,561.

Summary.—In 33 states and the District of Columbia some form of continuation study for practicing physicians was provided during 1946-1947. Table 28 summarizes the recorded enrolment for the year 1946-1947, with comparative figures for the previous year. The popularity of this type of training is evidenced in the total figure (59,811), which represents the greatest number of physicians to seek such opportunities in a single year. In 1944-1945 the attendance totaled 18,206, and in 1945-1946 it was 45,955.

The institutions of the country are to be commended for the expansion of their facilities in order to provide this form of continuation study for physicians.

APPROVED INTERNSHIPS

Council on Medical Education and Hospitals of the American Medical Association

535 North Dearborn Street, Chicago 10

Revised to Aug. 16, 1947

HOSPITALS, 764. INTERNSHIPS, 8,539

The following general hospitals, investigated and approved by the Council on Medical Education and Hospitals, are considered in position to furnish acceptable intern training in accordance with standards adopted by the American Medical Association. Three types of internships are approved by the Council—rotating, mixed and straight:

1. A rotating internship is defined as one which provides supervised experience in internal medicine, surgery, pediatrics, obstetrics and their related subspecialties, together with experience in laboratory and radiologic diagnosis. 2. A mixed internship is defined as one which provides supervised experience in two or more, but not in all, of the clinical divisions named. 3. A straight internship is defined as one which provides supervised experience in a single department, although it may include limited opportunity for work in a related subspecialty. Straight internships are now approved in internal medicine, surgery, pediatrics, obstetrics (with or without gynecology) and pathology.

The hospitals approved for intern training are likewise accredited for general residencies which represent general house staff assignments following the internship. The plus (+) sign indicates additional approval for residencies in specialties, as shown in the Council's list of Approved Residencies and Fellowships for Veteran and Civilian Physicians. Hospitals have now returned to the regular internships of 12 months duration or longer, appointments beginning as a general rule on July 1.

United States Army.

Letterman General Hospital +	San Francisco
Fitzsimons General Hospital +	Denver
Walter Reed General Hospital +	Washington, D. C.
Oliver General Hospital +	Augusta, Ga.
Percy Jones General Hospital +	Battle Creek, Mich.
William Beaumont General Hospital +	El Paso, Texas
Brooke General Hospital +	San Antonio, Texas
Madigan General Hospital +	Fort Lewis, Wash.

United States Navy.—Address applications to Surgeon General, Bureau of Medicine and Surgery, Washington, D. C.

U. S. Naval Hospital +	Long Beach, Calif.
U. S. Naval Hospital	Mare Island, Calif.
U. S. Naval Hospital +	Oakland, Calif.
U. S. Naval Hospital +	San Diego, Calif.
U. S. Naval Hospital +	Jacksonville, Fla.
U. S. Naval Hospital +	Pensacola, Fla.
U. S. Naval Hospital +	Great Lakes, Ill.
U. S. Naval Hospital + (National Naval Medical Center)	Bethesda, Md.
U. S. Naval Hospital +	Chelsea, Mass.
U. S. Naval Hospital +	Brooklyn
U. S. Naval Hospital +	St. Albans, N. Y.
U. S. Naval Hospital +	Philadelphia
U. S. Naval Hospital +	Newport, R. I.
U. S. Naval Hospital	Charleston, S. C.
U. S. Naval Hospital	Memphis, Tenn.
U. S. Naval Hospital	Corpus Christi, Texas
U. S. Naval Hospital	Houston, Texas
U. S. Naval Hospital +	Portsmouth, Va.
U. S. Naval Hospital	Bremerton, Wash.
U. S. Naval Hospital	Aiea Heights, Hawaii

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
ALABAMA													
Jefferson and Hillman Hospitals +¹	Birmingham	County	705	20,281	60	100	R	30	(4)	Req	30	$ 15	July
Norwood Hospital +¹	*Birmingham*	*Church*	207	6,855	95	100	R	6	No	Req	48	75	July
South Highlands Infirmary	Birmingham	Corp	165	5,036	25	100	M	2	No	Req	21	100	July
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company +	Fairfield	NPAssn	315	6,908	100	..	R	12	No	Req	41	50	July
City Hospital +	Mobile	CyCo	308	7,060	75	75	R	6	No	Req	23	75	June
ARIZONA													
Good Samaritan Hospital ¹	Phoenix	Church	242	7,731	..	20	R	5	No	None	28	50	July
St. Joseph's Hospital +	Phoenix	Church	232	7,144	10	95	R	6	No	None	46	40	July
St. Monica's Hospital +	Phoenix	Church	230	5,808	..	..	R	6	No	Req	32	75	July
ARKANSAS													
Baptist State Hospital +¹	Little Rock	Church	340	9,697	..	100	R	10	No	None	..	60	July
St. Vincent Infirmary +	Little Rock	Church	260	8,911	15	100	R	6	No	None	24	50	July
University Hospital +¹	Little Rock	State	230	3,805	100	..	R	12	(5)	Req	50	50	July
CALIFORNIA													
Herrick Hospital +¹	Berkeley	NPAssn	125	4,585	..	..	R	5	No	Req	24	50	July
San Joaquin General Hospital +	French Camp	County	577	11,658	100	..	R	5	No	Req	72	89	July
General Hospital of Fresno County +³	*Fresno*	*County*	578	7,483	100	..	R	12	No	Req	27	40(b)	July
Glendale Sanitarium and Hospital ¹	Glendale	Church	275	6,566	20	100	R	6	No	Req	48	130(a)	July
Loma Linda Sanitarium and Hospital +¹	Loma Linda	Church	153	4,117	80	..	R	5	No	Req	45	104(a)	July
Seaside Memorial Hospital +¹	Long Beach	NPAssn	480	15,297	..	..	R	12	No	Req	25	100	JanJuly
California Hospital +¹	Los Angeles	Church	388	13,580	64	100	R	14	(6)	Req	50	50	July
Cedars of Lebanon Hospital +¹,³	*Los Angeles*	*NPAssn*	360	14,133	10	100	R	10	No	Req	39	60	July
Hospital of the Good Samaritan +¹	Los Angeles	Church	482	11,200	15	50.	R	20	(7)	*Req*	36	*60*	*July*
Los Angeles County *Hospital* +¹,³	Los Angeles	County	3,624	54,593	100	..	R	120	No	Op	33	60	July
Presbyterian Hospital-Olmsted Memorial +¹	Los Angeles	Church	349	9,935	..	..	R	6	No	None	50	45	July
Queen of Angels Hospital +	Los Angeles	Church	450	12,612	..	90	R	14	No	Req	29	50	July
St. Vincent's Hospital +	Los Angeles	Church	300	12,739	..	..	R	8	No	None	43	50	July
Santa Fe Coast Lines Hospital +	Los Angeles	NPAssn	197	4,919	100	..	R	8	(8)	Req	57	80	July
White Memorial Hospital +¹,³	Los Angeles	Church	226	8,574	54	100	R	15	No	Req	44	89(a)	July
Highland-Alameda County Hospital +¹,³	Oakland	County	511	8,916	100	..	R	24	(9)	Req	59	40(b)	July
Permanente Foundation Hospital +¹	Oakland	NPAssn	330	6,989	75	100	R	14	*No*	*Op*	*70*	75	July
Orange County General *Hospital* ¹	Orange	County	380	2,978	100	..	R	11	No	Req	32	125	July
Collis P. and Howard Huntington Memorial Hospital +	Pasadena	NPAssn	244	8,960	3	100	R	7	(10)	Req	59	55	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
CALIFORNIA—Continued													
Sacramento County Hospital	Sacramento	County	500	8,866	100	..	R	12	No	Req	20	75	July
San Bernardino County Charity Hospital +	San Bernardino	County	358	4,060	100	..	R	9	No	Req	50	110	July
Mercy Hospital	San Diego	Church	423	13,221	..	..	R	8	No	None	18	55	July
San Diego County General Hospital +[3]	San Diego	County	782	7,081	100	..	R	15	No	Req	36	100	July
Children's Hospital +[1]	San Francisco	NPAssn	285	7,010	16	100	R	10	No	Req	57	35	July
Franklin Hospital +[1]	San Francisco	NPAssn	272	6,636	10	100	R	10	No	Op	33	35	July
French Hospital +[1]	San Francisco	NPAssn	213	4,706	..	..	R	7	No	Req	27	35(b)	July
Mary's Help Hospital +[1]	San Francisco	Church	233	6,428	7	100	R	5	No	Req	39	100	July
Mount Zion Hospital +[1]	San Francisco	NPAssn	103	5,362	10	100	R	8	No	Req	61	50	July
St. Joseph's Hospital [1]	San Francisco	Church	280	7,418	10	75	R	7	No	None	36	50	July
St. Luke's Hospital +[1]	San Francisco	Church	225	6,280	10	50	R	6	No	Req	38	40(b)	July
St Mary's Hospital +	San Francisco	Church	425	10,278	..	..	R	10	No	Req	34	50	July
San Francisco Hospital +[1,3]	San Francisco	CyCo	1,396	17,000	100	..	R	52	(11)	Req	27	100(a)	July
Southern Pacific General Hospital +	San Francisco	NPAssn	450	7,152	100	..	R	16	(12)	Req	38	60	July
Stanford University Hospitals +[1]	San Francisco	NPAssn	409	10,127	43	100	S	16	No	Req	44	25	July
United States Marine Hospital +[3]	San Francisco	USPHS	589	8,225	100	..	R	13	(13)	Req	69	163	July
University of California Hospital +[1]	San Francisco	State	500	7,518	59	41	S	22	(14)	Req	69	25	July
Santa Clara County Hospital +[3]	San Jose	County	466	5,737	100	..	R	10	No	Req	31	50(b)	July
St. Francis	Santa Barbara	Church	108	3,255	..	..	R	3	No	None	33	100	July
Santa Barbr	Santa Barbara	NPAssn	210	5,609	..	..	R	6	No	None	51	50	July
Santa Barbr	Santa Barbara	County	251	1,229	..	100	R	5	No	None	43	50	July
St John's Hospital +	Santa Monica	Church	153	4,746	..	..	R	4	No	None	30	25	July
Santa Monica Hospital [1]	Santa Monica	Church	220	7,695	55	100	R	10	(15)	Req	57	50	July
COLORADO													
Colorado General Hospital +[1]	Denver	State	266	3,696	100	..	R	16	(16)	Op	75	20	July
Denver General Hospital +	Denver	CyCo	650	9,562	100	..	R	18	No	Op	34	30	July
Mercy Hospital [1]	Denver	Church	280	9,108	10	25	R	6	No	Req	38	50	July
Porter Sanitarium and Hospital [1]	Denver	Church	153	4,686	21	97	R	6	(17)	Req	34	55	July
Presbyterian Hospital +	Denver	Church	225	6,765	..	..	R	5	No	Req	57	32.50	July
St. Anthony Hospital	Denver	Church	240	7,201	4	..	R	3	No	None	27	50	July
St Joseph's Hospital	Denver	Church	340	9,985	..	..	R	6	No	None	27	50	July
St Luke's Hospital +	Denver	Church	280	8,175	..	95	R	8	No	Op	36	25	July
Corwin Hospital +[1]	Pueblo	NPAssn	227	4,976	..	100	R	6	No	Req	52	50	July
CONNECTICUT													
Bridgeport Hospital +[1]	Bridgeport	NPAssn	400	11,903	14	..	R	14	No	None	36	100	July
St Vincent's Hospital	Bridgeport	Church	422	11,044	9	..	R	10	No	None	15	100	July
Danbury Hospital	Danbury	NPAssn	220	4,881	25	100	R	4	No	None	24	100	July
Hartford Hospital +[1, 3]	Hartford	NPAssn	936	22,825	25	100	R	24	No	Op	43	10	July
J J McCook Memorial Hospital +	Hartford	City	302	3,950	100	.	R	12	No	Req	31	50	July
St Francis Hospital +	Hartford	Church	606	15,592	18	100	R	12	No	Req	31	35	July
Meriden Hospital [1]	Meriden	NPAssn	176	4,276	11	89	R	6	(18)	Req	30	100	July
Middlesex Hospital	Middletown	NPAssn	173	4,116	17	.	R	6	(19)	None	28	100	July
New Britain General Hospital +[1]	New Britain	NPAssn	258	7,158	12	.	R	8	No	None	29	50	July
Grace New Haven Community Hospital													
Grace Unit +	New Haven	NPAssn	270	6,214	35	62	R	8	No	Req	29	25	July
New Haven Unit +[1, 3]	New Haven	NPAssn	592	10,794	52	48	S	30	No	Req	51	No	July
Hospital of St Raphael +	New Haven	Church	390	9,628	17	40	R	14	No	Req	24	50	July
Lawrence and Memorial Assoc. Hospitals +[1]	New London	NPAssn	330	5,882	30	..	R	4	No	None	24	105	July
Norwalk General Hospital	Norwalk	NPAssn	255	7,164	8	20	R	6	No	Req	33	137 50	July
William W Backus Hospital	Norwich	NPAssn	180	4,218	15	..	R	2	No	Req	34	125	July
Stamford Hospital	Stamford	NPAssn	324	6,257	15	100	R	9	No	Req	35	100	July
St Mary's Hospital [1, 3]	Waterbury	Church	384	8,749	12	100	R	8	No	Req	31	75	July
Waterbury Hospital +[1, 3]	Waterbury	NPAssn	370	9,860	12	100	R	8	No	Req	39	75	July Oct
DELAWARE													
Delaware Hospital +[3]	Wilmington	NPAssn	432	10,882	19	100	R	12	No	Req	51	100	July
Memorial Hospital +[1]	Wilmington	NPAssn	258	5,222	..	..	R	6	No	Req	52	100	July
St Francis Hospital	Wilmington	Church	137	2,714	.	100	R	3	No	Req	26	125	July
Wilmington General Hospital [3]	Wilmington	NPAssn	224	3,953	25	100	R	7	No	Req	37	125	July
DISTRICT OF COLUMBIA													
Central Dispensary and Emergency Hosp +[3]	Washington	NPAssn	325	7,930	30	90	R	14	(20)	Req	46	25	July
Doctors Hospital +	Washington	Corp	305	8,487	10	100	R	8	(21)	None	65	50	July
Freedmen's Hospital +[1, 3]	Washington	USPHS	552	7,398	56	100	R	16	No	Req	26	50	July
Gallinger Municipal Hospital +[1, 3]	Washington	City	1,543	17,636	100	..	R	32	No	Op	44	50	July
Garfield Memorial Hospital +[1, 3]	Washington	NPAssn	467	14,125	..	60	R	12	No	Req	56	15(b)	July
Georgetown University Hospital +[3]	Washington	NPAssn	301	6,930	47	35	R	13	(22)	Req	40	60	July
George Washington University Hospital +	Washington	NPAssn	112	2,886	6	100	R	5	No	Req	48	.	July
Providence Hospital +[1, 3]	Washington	Church	382	11,027	7	100	R	13	No	Req	40	50	July
St Elizabeths Hospital +[1, 3]	Washington	Fed	7,334	1,561	100	..	R	12	(20)	None	63	183 33	July
Sibley Memorial Hospital +[1]	Washington	Church	356	10,854	2	..	R	9	No	Req	68	50	July
Washington Sanit and Hosp, Takoma Pk.[1]	Washington	Church	217	3,586	60	50	R	4	No	Req	29	85	July
FLORIDA													
Duval County Hospital +	Jacksonville	County	240	3,520	100	..	R	10	No	Req	51	15(b)	July
St. Luke's Hospital +	Jacksonville	NPAssn	210	7,006	4	15	R	5	No	None	..	65(b)	July
St Vincent's Hospital +	Jacksonville	Church	275	9,269	3	..	R	6	No	None	37	50	July
James M. Jackson Memorial Hospital +[3]	Miami	City	660	16,445	40	..	R	18	No	Req	31	34 50	July
Orange Memorial Hospital [1]	Orlando	NPAssn	263	5,331	7	100	R	6	No	None	25	75	July
Tampa Municipal Hospital	Tampa	City	336	10,496	..	..	R	4	No	Req	17	50	July
GEORGIA													
Crawford W Long Memorial Hospital +[1]	Atlanta	NPAssn	459	12,695	2	100	R	16	No	None	..	50	July
Georgia Baptist Hospital +[1]	Atlanta	Church	214	7,559	17	100	R	7	No	None	17	35(b)	July
Grady Memorial Hospital +[1,3]	Atlanta	Counties	750	15,661	100	..	S	29	No	Req	39	10	July
Piedmont Hospital +[1]	Atlanta	NPAssn	150	4,461	..	..	R	5	No	None	45	35(b)	July
St Joseph's Infirmary +	Atlanta	Church	164	5,109	65	100	R	3	No	Req	30	100	July
University Hospital +[1]	Augusta	City	545	11,416	32	100	R	16	No	Req	30	20	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
GEORGIA—Continued													
Columbus City Hospital[1]	Columbus	City	339	8,257	22	100	R	8	No	Req	15	75	July
Emory University Hospital +	Emory University	NPAssn	310	9,296	12	100	S	10	No	Req	30	25(b)	July
Macon Hospital	Macon	CyCo	257	8,180	20	100	R	8	No	Req	15	50	July
ILLINOIS													
Alexian Brothers Hospital +(c)	Chicago	Church	275	4,427	..	100	R	7	(21)	None	45	50	July
American Hospital +[1]	Chicago	NPAssn	185	6,650	32	85	R	4	No	Op	31	25	July
Augustana Hospital +	Chicago	Church	305	7,218	6	75	R	10	No	Req	30	25	July
Belmont Community Hospital	Chicago	NPAssn	137	4,152	..	..	R	4	No	None	16	100	July
Chicago Memorial Hospital +	Chicago	NPAssn	112	2,668	12	100	R	5	No	Req	61	150	July
Columbus Hospital	Chicago	Church	150	3,862	15	100	R	5	(21)	None	54	75	July
Cook County Hospital +[1]	Chicago	County	3,061	64,850	100	..	R	112	No	Req	21	13	July
Edgewater Hospital +	Chicago	NPAssn	163	6,163	..	100	R	8	No	None	40	75(b)	JanOct
Englewood Hospital	Chicago	NPAssn	189	6,087	2	20	R	6	No	None	24	100	Varies
Evangelical Hospital[1]	Chicago	Church	215	7,460	..	..	R	6	No	None	21	150	July
Garfield Park Community Hospital	Chicago	NPAssn	182	5,670	..	100	R	6	No	None	..	75	July
Grant Hospital +[1]	Chicago	NPAssn	288	7,523	3	100	R	10	No	Req	23	50	July
Henrotin Hospital +[1]	Chicago	NPAssn	127	3,214	48	100	R	4	No	Req	51	75	July
Holy Cross Hospital	Chicago	Church	161	4,507	..	..	R	6	No	None	23	100	July
Hospital of St. Anthony de Padua[1]	Chicago	Church	242	6,774	3	100	R	9	No	None	25	100	July
Illinois Central Hospital[1]	Chicago	NPAssn	290	5,532	50	..	R	9	No	Req	37	82.50	July
Illinois Masonic Hospital +[1]	Chicago	NPAssn	156	5,579	..	100	R	6	No	Req	31	50	July
Jackson Park Hospital[1]	Chicago	Corp	137	4,521	..	100	R	6	No	None	27	150	Varies
Loretto Hospital[1]	Chicago	Church	167	4,329	..	..	R	6	No	None	59	100(b)	July
Lutheran Deaconess Home and Hospital +	Chicago	Church	235	7,221	15	..	R	7	No	None	23	75	July
Mercy Hospital-Loyola University Clinics +[1]	Chicago	Church	400	8,267	10	80	R	12	No	Req	44	25	July
Michael Reese Hospital +[1]	Chicago	NPAssn	718	14,830	21	..	R	38	(25)	Op	66	15	July
Mother Cabrini Memorial Hospital	Chicago	Church	152	4,349	..	100	R	4	No	None	21	150	July
Mount Sinai Hospital +[1]	Chicago	NPAssn	277	7,320	14	100	R	13	No	Op	40	15	July
Norwegian-American Hospital +[1]	Chicago	NPAssn	214	6,202	..	..	R	6	No	None	23	100	July
Passavant Memorial Hospital +[1]	Chicago	NPAssn	255	5,600	..	100	R	12	(26)	Req	63	No	Quarterly
Presbyterian Hospital +[1]	Chicago	Church	481	11,928	..	100	R	25	No	Op	64	No	July
Provident Hospital +[1]	Chicago	NPAssn	196	5,110	..	100	R	9	(27)	Req	57	25	July
Ravenswood Hospital +[1]	Chicago	NPAssn	205	5,278	..	..	R	8	No	None	31	100(b)	July
Research and Educational Hospitals +[1,3]	Chicago	State	513	5,915	100	..	R	24	No	Req	50	No	July
Roseland Community Hospital	Chicago	NPAssn	125	3,603	..	..	R	4	No	None	28	150	July
St. Anne's Hospital +	Chicago	Church	350	8,725	..	..	R	11	No	None	36	100(b)	July
St. Bernard's Hospital	Chicago	Church	231	7,786	..	..	R	8	No	None	33	100	June
St. Elizabeth's Hospital +[1]	Chicago	Church	315	8,676	..	..	R	8	No	None	31	75	July
St. Joseph Hospital +[1]	Chicago	Church	300	7,085	..	100	R	6	No	Op	43	50	July
St. Luke's Hospital +[1]	Chicago	NPAssn	585	14,303	15	100	R	40	No	Req	59	No	July
St. Mary of Nazareth Hospital +	Chicago	Church	323	11,272	9	80	R	8	No	None	42	75	July
Swedish Covenant Hospital +[1]	Chicago	Church	258	6,337	..	100	R	8	No	None	21	75	JulySept
United States Marine Hospital +[2]	Chicago	USPHS	300	2,556	100	..	R	7	(28)	Req	70	142	Varies
University Hospital[1]	Chicago	NPAssn	100	3,510	..	100	M	4	No	None	29	15	Varies
University of Chicago Clinics +[1,3]	Chicago	NPAssn	660	11,779	..	100	R	48	No	Req	83	No	July
Walther Memorial Hospital	Chicago	Church	209	5,741	..	..	R	6	No	None	34	75	July
Wesley Memorial Hospital +[1]	Chicago	Church	579	12,541	9	100	R	30	No	None	62	No	JanJuly
Women and Children's Hospital +[2]	Chicago	NPAssn	145	4,963	21	100	R	6	No	Req	56	50-75	July
Woodlawn Hospital +[1]	Chicago	NPAssn	157	3,429	..	..	R	4	No	None	58	50	July
St. Mary's Hospital[1]	East St. Louis	Church	301	6,154	..	100	R	6	No	None	..	150	July
Memorial Hospital[1]	Elmhurst	NPAssn	152	4,817	..	..	R	3	No	None	19	50	JanJuly
Evanston Hospital +	Evanston	NPAssn	292	8,996	9	100	R	18	(29)	Req	86	No	JanJuly
St. Francis Hospital +	Evanston	Church	420	9,999	2	100	R	11	No	None	35	50	July
Little Company of Mary Hospital +	Evergreen Park	Church	265	8,621	..	100	R	6	No	None	25	100	July
St. Joseph's Hospital	Joliet	Church	315	8,243	..	100	R	6	No	None	34	100	Varies
Moline Public Hospital[1]	Moline	City	246	6,169	..	100	R	3	No	None	17	100(b)	July
Oak Park Hospital	Oak Park	Church	190	4,462	..	..	R	5	No	None	18	..	Varies
West Suburban Hospital +	Oak Park	NPAssn	412	10,468	..	100	R	12	No	Req	41	50	July
Methodist Hospital of Central Illinois +	Peoria	Church	240	6,441	..	100	R	8	No	None	26	100	July-
St. Francis Hospital +[1,3]	Peoria	Church	593	12,883	25	100	R	10	No	Req	35	75	July
St. Mary's Hospital	Quincy	Church	205	5,392	25	65	R	3	No	None	..	..	July
Memorial Hospital	Springfield	NPAssn	300	6,153	..	..	R	8	No	None	28	50	July
INDIANA													
St. Catherine Hospital[1]	East Chicago	Church	324	6,872	..	..	R	7	No	None	21	100(b)	July
Protestant Deaconess Hospital	Evansville	Church	275	8,001	..	..	R	3	No	None	16	75	Varies
St. Mary's Hospital	Evansville	Church	195	4,633	..	..	R	4	No	None	16	25	Varies
Lutheran Hospital	Fort Wayne	Church	250	5,635	..	95	R	4	No	None	20	75(b)	July
St. Joseph Hospital +	Fort Wayne	Church	350	7,548	5	..	R	6	No	None	31	50	July
Methodist Hospital[1]	Gary	Church	275	6,560	..	100	R	6	No	None	40	100	July
St. Mary's Mercy Hospital +	Gary	Church	292	6,825	..	..	R	6	No	None	25	100(b)	July
St. Margaret Hospital +	Hammond	Church	286	9,158	..	100	R	10	No	None	24	125	JanJuly
Indianapolis City Hospital +[1,3]	Indianapolis	City	714	10,565	85	100	R	32	(30)	Req	41	60	July
Indiana University Medical Center +[1,3]	Indianapolis	State	646	9,740	66	100	R	32	No	Op	58	12.50	July
Methodist Hospital +[1]	Indianapolis	Church	702	20,765	10	100	R	24	No	Op	33	125	July
St. Vincent's Hospital +[1]	Indianapolis	Church	400	11,140	..	100	R	14	No	None	26	125	July
St. Elizabeth Hospital +	La Fayette	Church	335	7,492	..	95	R	8	No	None	22	100	July
Ball Memorial Hospital +[1]	Muncie	NPAssn	247	7,425	..	100	R	8	No	None	27	75	July
Memorial Hospital +	South Bend	NPAssn	205	9,229	5	100	R	5	No	Op	34	75(b)	July
St. Joseph Hospital[1]	South Bend	Church	223	6,080	25	100	R	4	No	None	31	75(b)	July
St. Anthony Hospital	Terre Haute	Church	214	4,981	3	..	R	2	No	None	..	75	July
IOWA													
Mercy Hospital	Cedar Rapids	Church	190	7,615	..	..	R	2	No	None	22	..	Varies
Jennie Edmundson Memorial Hospital[1]	Council Bluffs	NPAssn	157	5,130	..	100	R	3	No	None	19	75	Varies
Mercy Hospital[1]	Council Bluffs	Church	172	4,534	..	..	R	4	(31)	None	21	75	July
Broadlawns Polk County Hospital[1]	Des Moines	County	167	4,035	100	..	R	10	No	Req	41	75	July
Iowa Lutheran Hospital[1]	Des Moines	Church	155	4,616	..	100	R	3	No	None	19	75	July
Iowa Methodist Hospital +[1]	Des Moines	Church	330	10,271	..	..	R	12	No	None	74	75	July
Mercy Hospital +[1]	Des Moines	Church	220	7,546	..	..	R	5	No	None	40	75	July
University Hospitals +[1,3]	Iowa City	State	954	18,496	100	..	R	20	No	Req	56	25	July
St. Joseph Mercy Hospital	Sioux City	Church	300	9,220	..	100	R	5	No	Req	..	..	July

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Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
KANSAS													
Bethany Hospital[1]	Kansas City	Church	180	5,065	..	..	R	6	No	None	37	100	Varies
Providence Hospital[1]	Kansas City	Church	164	3,532	..	100	R	3	No	None	50	50(b)	July
St. Margaret's Hospital +	Kansas City	Church	228	4,861	6	100	R	6	No	None	50	40	July
University of Kansas Hospitals +[1,3]	Kansas City	State	393	8,181	58	..	R	12	No	Op	59	25	July
St. Francis Hospital +	Wichita	Church	450	13,373	..	..	R	10	No	None	43	75	AprilJuly
Wesley Hospital +[1]	Wichita	Church	370	8,968	..	..	R	7	(32)	None	29	75	July
Wichita Hospital[1]	Wichita	Church	165	3,611	..	..	R	4	(33)	None	19	100	July
KENTUCKY													
St. Elizabeth Hospital[1]	Covington	Church	367	9,308	5	..	R	10	No	None	..	50	July
Good Samaritan Hospital	Lexington	Church	315	8,038	20	100	R	6	No	None	24	50	July
St. Joseph Hospital +	Lexington	Church	298	9,568	25	91	R	4	No	None	31	75	July
Kentucky Baptist Hospital	Louisville	Church	195	5,373	..	..	R	5	No	None	24	35	July
Louisville General Hospital +[1,3]	Louisville	CyCo	637	12,006	100	..	R	28	(34)	Req	38	20	July
Norton Memorial Infirmary +	Louisville	NPAssn	185	5,481	5	90	R	6	(35)	Op	26	50	July
St. Anthony Hospital	Louisville	Church	176	5,041	..	98	R	3	(35)	None	30	75	July
St. Joseph Infirmary +	Louisville	Church	325	11,171	6	..	R	11	No	Req	25	50	July
SS. Mary and Elizabeth Hospital	Louisville	Church	225	6,556	10	..	R	4	No	None	25	75	July
LOUISIANA													
Charity Hospital of Louisiana +[1,3]	New Orleans	State	3,496	41,449	100	..	R	120	No	Req	49	10	July
Flint Goodridge Hosp. of Dillard University	New Orleans	NPAssn	117	2,927	11	..	R	4	No	Req	29	..	Varies
Hotel Dieu, Sisters' Hospital +[1]	New Orleans	Church	395	10,939	3	..	R	10	No	None	34	50	July
Mercy Hospital-Soniat Memorial	New Orleans	Church	157	4,976	..	..	R	4	No	None	33	..	July
Southern Baptist Hospital +	New Orleans	Church	441	16,279	12	100	R	16	No	None	25	30	July
Touro Infirmary +	*New Orleans*	*NPAssn*	*424*	*15,383*	..	*100*	*R*	*19*	*No*	*Req*	*55*	*10*	*July*
United States Marine Hospital +[1,3]	New Orleans	USPHS	570	6,482	100	..	R	12	No	Req	76	87.14	July
Highland Sanitarium[1]	Shreveport	Part	120	3,728	..	100	R	4	No	None	36	75	July
North Louisiana Sanitarium[1]	Shreveport	Corp	147	5,173	..	100	R	2	(36)	Req	21	75	July
T. E. Schumpert Memorial Sanitarium	Shreveport	Church	133	4,747	..	..	R	3	No	None	..	150	July
Shreveport Charity Hospital +[1]	Shreveport	State	701	11,181	100	..	R	26	No	Op	47	20	July
Tri-State Hospital	Shreveport	Corp	140	5,517	..	..	R	4	No	None	33	50(b)	July
MAINE													
Eastern Maine General Hospital[1]	Bangor	NPAssn	243	6,496	35	98	R	6	No	Req	20	50	July
Central Maine General Hospital +[1]	Lewiston	NPAssn	264	4,905	..	100	R	6	No	Req	43	25	July
St. Mary's General Hospital	Lewiston	Church	180	3,511	20	75	R	3	No	Req	38	70	July
Maine General Hospital +	Portland	NPAssn	385	8,176	60	15	R	6	No	Req	29	25	July
MARYLAND													
Baltimore City Hospitals +[1,3]	Baltimore	City	2,105	7,188	100	..	R&S	40	No	Req	55	15	July
Bon Secours Hospital +	Baltimore	Church	180	4,239	..	100	R	4	No	Req	73	25	July
Church Home and Hospital +[1]	Baltimore	Church	193	4,907	14	100	R&S	7	No	Req	42	25	July
Franklin Square Hospital +[1]	*Baltimore*	*NPAssn*	*274*	*5,447*	*20*	..	*R*	*6*	*No*	*Req*	*30*	*50(b)*	*July*
Hospital for Women +[1]	Baltimore	NPAssn	162	3,981	26	100	R	5	No	Req	40	25	July
Johns Hopkins Hospital +[1,3]	Baltimore	NPAssn	1,065	18,235	61	100	S	80	No	Req	65	No	July
Maryland General Hospital +[1]	Baltimore	Church	268	5,738	18	100	R	8	No	Req	19	25	July
Mercy Hospital +	Baltimore	Church	337	7,623	40	100	R	14	No	Req	26	25	July
Provident Hospital and Free Dispensary +[1]	Baltimore	NPAssn	145	2,634	..	..	R	7	No	Req	15	15(b)	July
St. Agnes' Hospital +[1]	Baltimore	Church	277	6,750	..	100	R	6	No	Req	25	30	July
St. Joseph's Hospital +[3]	Baltimore	Church	290	6,938	42	100	R	8	No	Req	40	25	July
Sinai Hospital +[1,3]	Baltimore	NPAssn	368	7,654	26	100	R&S	17	No	Req	60	25	July
South Baltimore General Hospital +	Baltimore	NPAssn	174	4,231	46	100	R	6	No	Req	31	50	July
Union Memorial Hospital +	Baltimore	NPAssn	377	7,914	19	..	R	17	No	Op	17	No	July
United States Marine Hospital +[3]	Baltimore	USPHS	500	7,954	100	..	R	12	(37)	Req	67	162.83	July
University Hospital +[1,3]	Baltimore	State	505	9,834	46	100	R	24	No	Req	58	No	July
West Baltimore General Hospital +[1]	Baltimore	NPAssn	202	4,920	14	100	R	8	No	Op	44	50	July
Suburban Hospital +	Bethesda	NPAssn	124	3,287	15	..	R	3	No	Req	59	25	Varies
Washington County Hospital	Hagerstown	NPAssn	206	5,932	..	..	R	6	No	None	21	35	Varies
MASSACHUSETTS													
Beverly Hospital +	Beverly	NPAssn	207	4,649	30	70	R	4	No	Req	80	No	July
Beth Israel Hospital +	Boston	NPAssn	215	6,020	35	..	S	13	(38)	Req	58	No	July
Boston City Hospital +[1,3]	Boston	City	2,537	36,888	100	..	S	125	No	Req	19	No	July
Carney Hospital +	Boston	Church	258	5,713	24	99	S	9	No	Req	39	No	July
Children's Hospital +[1,3]	Boston	NPAssn	353	7,093	72	..	S	26	(39)	Req	76	No	July
Faulkner Hospital +	Boston	NPAssn	161	3,222	..	100	R	3	No	None	50	No	July
Massachusetts General Hospital +[1,3]	Boston	NPAssn	449	7,227	100	..	S	31	No	Req	53	No	July
Massachusetts Memorial Hospitals +[1,3]	Boston	NPAssn	450	7,864	..	100	R&S	19	No	Req	70	No	July
New England Hospital for Women and Children +[2]	Boston	NPAssn	260	4,536	39	100	R	8	No	Req	35	No	Nov
Peter Bent Brigham Hospital +[3]	Boston	NPAssn	250	4,482	70	10	S	17	No	Req	74	No	July
St. Elizabeth's Hospital +[1]	Boston	Church	316	6,269	11	30	R	8	No	Req	21	25(b)	July
United States Marine Hospital +[3]	Boston	USPHS	463	5,717	100	..	M	6	No	Req	31	87.08	July
Brockton Hospital	Brockton	NPAssn	151	2,759	27	..	R	3	No	Req	31	75	July
Cambridge City Hospital +	Cambridge	City	400	6,539	56	..	R	12	No	Req	34	10	July
Mount Auburn Hospital +[1]	Cambridge	NPAssn	272	6,509	19	50	R	6	No	Req	45	No	July
Chelsea Memorial Hospital	Chelsea	NPAssn	123	2,523	11	100	R	2	No	Req	..	50	July
Union Hospital[1]	Fall River	NPAssn	201	4,878	15	90	R	4	No	Req	20	150	Varies
Burbank Hospital[1]	Fitchburg	City	266	4,727	30	..	R	4	No	Req	35	50	Varies
Holyoke Hospital	Holyoke	NPAssn	164	3,630	8	..	R	3	No	Req	..	50	July
Providence Hospital	Holyoke	Church	200	4,226	2	50	R	4	No	None	17	50	July
Lawrence General Hospital	Lawrence	NPAssn	233	5,300	15	..	R	3	No	Req	29	50	Varies
Lowell General Hospital	Lowell	NPAssn	212	3,867	19	..	R	3	No	Req	21	25	AprilJuly
St. John's Hospital	Lowell	Church	235	5,043	35	100	R	4	No	Req	31	100	July
St. Joseph's Hospital	Lowell	Church	170	4,190	21	..	R	3	No	Req	19	25	June
Lynn Hospital	Lynn	NPAssn	316	7,172	27	..	R	6	No	Req	26	..	July
St. Luke's Hospital	New Bedford	NPAssn	339	6,472	29	..	R	6	No	Req	16	25	July
Newton-Wellesley Hospital +[1]	Newton	NPAssn	286	5,608	23	45	R	6	No	Req	34	No	June

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Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
MASSACHUSETTS—Continued													
House of Mercy Hospital	Pittsfield	NPAssn	220	5,080	8	..	R	2	No	Req	..	50	July
St. Luke's Hospital	Pittsfield	Church	200	3,221	..	..	R	2	No	None	34	100	Varies
Quincy City Hospital +[1]	Quincy	City	384	7,861	12	100	R	9	No	Req	44	50	July
Salem Hospital +[3]	Salem	NPAssn	285	5,788	18	..	R	6	No	Req	32	30	July
Mercy Hospital	Springfield	Church	400	10,122	20	95	R	6	No	None	27	25	July
Springfield Hospital [1]	Springfield	NPAssn	285	7,439	16	20	R	12	(40)	Req	46	No	July
Wesson Memorial Hospital [1]	Springfield	NPAssn	112	3,206	9	75	R	5	(41)	None	26	50	Varies
Waltham Hospital	Waltham	NPAssn	185	3,561	13	..	R	4	No	Req	..	25(b)	July
Memorial Hospital +[1,3]	Worcester	NPAssn	215	8,962	..	100	R	10	No	Req	33	50	July
St. Vincent Hospital +	Worcester	Church	277	6,817	10	80	R	6	No	None	19	50	July
Worcester City Hospital +[1,3]	Worcester	City	540	9,459	65	95	R	20	No	Req	25	No	July
Worcester Hahnemann Hospital [1]	Worcester	NPAssn	136	3,707	15	90	R	4	No	None	24	50	July
MICHIGAN													
St. Joseph's Mercy Hospital +	Ann Arbor	Church	313	6,051	..	..	R	6	No	Req	46	100	July
University Hospital +[1,3]	Ann Arbor	State	634	14,471	100	..	R	27	No	Req	61	20	July
Leila Y. Post Montgomery Hospital +	Battle Creek	Church	200	6,749	..	100	R	2	No	Req	31	100	July
Mercy Hospital [1]	Bay City	Church	160	5,455	..	..	R	3	No	None	..	100	July
Charles Godwin Jennings Hospital +	Detroit	NPAssn	108	2,658	..	..	R	4	(42)	None	51	125	July
City of Detroit Receiving Hospital +[1]	Detroit	City	633	16,816	100	..	R	40	(49)	Req	25	103	July
Evangelical Deaconess Hospital [1]	Detroit	Church	225	6,900	..	..	R	6	No	Req	40	150	July
Grace Hospital +[1,3]	Detroit	NPAssn	513	15,194	12	100	R	36	(43)	Req	35	50	July
Harper Hospital +[1]	Detroit	NPAssn	685	19,950	3	100	R	36	(44)	Req	33	25(b)	Varies
Henry Ford Hospital +[1,3]	Detroit	NPAssn	634	16,470	..	100	R	30	No	Op	57	170(a)	July
Mount Carmel Mercy Hospital +	Detroit	Church	575	16,227	6	75	R	12	No	None	25	100	July
Providence Hospital +	Detroit	Church	414	12,873	10	10	R	20	(45)	Req	73	125	July
St. Joseph's Mercy Hospital +	Detroit	Church	246	7,202	10	31	R	4	No	Req	29	100	July
St. Mary's Hospital +	Detroit	Church	350	9,795	3	100	R	12	(46)	Req	59	75	July
United States Marine Hospital +[3]	Detroit	USPHS	293	3,892	100	..	R	6	(47)	Req	43	162.81	July
Woman's Hospital +[1]	Detroit	NPAssn	352	8,138	..	100	R	6	(48)	Req	60	80	July
Wayne County General Hospital and Infirmary +[1]	Eloise	County	6,368	5,205	99	..	R	24	(49)	Req	30	167.50	July
Hurley Hospital +	Flint	City	484	13,899	..	..	R	16	No	None	53	50	July
St. Joseph Hospital	Flint	Church	275	7,105	..	..	R	4	No	None	29	..	July
Blodgett Memorial Hospital +[1]	Grand Rapids	NPAssn	210	5,039	..	100	R	6	No	Req	51	75	Quarterly
Butterworth Hospital +[1]	Grand Rapids	NPAssn	286	9,081	7	100	R	8	No	Req	41	50	July
St. Mary's Hospital +	Grand Rapids	Church	321	8,255	4	100	R	7	No	Req	40	100	Varies
Highland Park General Hospital +[1]	Highland Park	City	300	8,085	5	100	R	8	No	Req	39	100	July
W. A. Foote Memorial Hospital	Jackson	City	185	5,632	..	..	R	2	No	None	16	100	July
Mercy Hospital [1]	Jackson	Church	150	5,015	..	..	R	3	No	None	16	150	Aug
Borgess Hospital +[1]	Kalamazoo	Church	295	6,184	..	..	R	4	No	None	29	100	July
Bronson Methodist Hospital +[1]	Kalamazoo	Church	170	5,072	..	..	R	6	No	None	34	100	July
Edward W. Sparrow Hospital [1]	Lansing	NPAssn	253	7,103	2	100	R	7	(50)	None	50	230	July
St. Lawrence Hospital	Lansing	Church	270	6,712	..	..	R	8	(50)	None	45	..	July
Hackley Hospital +	Muskegon	NPAssn	174	5,177	..	..	R	4	No	None	31	..	July
Pontiac General Hospital	Pontiac	City	225	7,058	..	..	R	3	No	None	15	165	Varies
Saginaw General Hospital +	Saginaw	NPAssn	250	7,041	..	100	R	3	No	Req	33	50	July
St. Mary's Hospital [1]	Saginaw	Church	204	5,791	..	..	R	2	No	None	..	..	July
MINNESOTA													
St. Luke's Hospital +	Duluth	NPAssn	270	8,998	..	100	R	9	(51)	Req	78	25	July
St. Mary's Hospital +	Duluth	Church	300	9,235	..	100	R	10	(51)	Req	79	25	July
Asbury Hospital [1]	Minneapolis	Church	174	5,338	..	100	R	4	No	None	47	50	Quarterly
Minneapolis General Hospital +[1,3]	Minneapolis	City	629	10,111	100	..	R	30	(52)	Req	51	25	July
Northwestern Hospital +	Minneapolis	NPAssn	292	7,989	..	..	R	7	No	None	50	50	July
St. Barnabas Hospital +	Minneapolis	NPAssn	244	7,251	..	..	R	4	No	None	63	100	July
St. Mary's Hospital +[1]	Minneapolis	Church	365	11,883	..	100	R	10	No	None	30	50	July
Swedish Hospital [1]	Minneapolis	NPAssn	372	10,361	..	..	R	4	No	None	41	50	July
University Hospitals +[1,3]	Minneapolis	State	475	8,960	100	..	S	28	No	Req	75	No	April
Ancker Hospital +[3]	St. Paul	CyCo	905	7,072	100	..	R	24	No	Req	68	30	Jan.July
Bethesda Hospital [1]	St. Paul	Church	200	7,715	..	100	R	5	(53)	Req	36	100	July
Charles T. Miller Hospital +	St. Paul	NPAssn	325	8,283	37	100	R	9	(54)	Req	49	50	July
St. Joseph's Hospital [1]	St. Paul	Church	312	10,208	15	..	R	8	No	None	40	60	July
MISSOURI													
St. Louis County Hospital +	Clayton	County	248	3,022	98	2	R	6	No	Req	39	30	July
Kansas City General Hospital No. 1 +[3]	Kansas City	City	610	9,182	100	..	R	22	(55)	Req	60	25	July
Kansas City General Hospital No. 2 [3]	Kansas City	City	276	3,959	100	..	R	6	No	Req	22	25	July
Menorah Hospital +[1]	Kansas City	NPAssn	175	4,353	..	100	R	6	No	None	27	100	July
Research Hospital +[1]	Kansas City	NPAssn	251	6,913	..	100	R	8	No	None	56	50	July
St. Joseph Hospital +[1]	Kansas City	Church	291	9,788	10	100	R	8	No	None	46	50	July
St. Luke's Hospital +[1]	Kansas City	Church	327	8,258	..	..	R	7	No	Req	70	50	July
St. Mary's Hospital +[1]	Kansas City	Church	182	6,056	..	..	R	5	No	None	68	50	July
Trinity Lutheran Hospital	Kansas City	Church	150	3,672	..	..	R	4	No	None	45	100	July
Missouri Methodist Hospital	St. Joseph	Church	235	6,287	..	98	R	5	No	None	20	100	July
St. Joseph's Hospital [1]	St. Joseph	Church	150	4,364	8	50	R	2	No	None	22	100	July
Burnes Hospital +[1,3]	St. Louis	Church	585	14,207	25	100	S	37	(56)	Req	70	10	July
Christian Hospital	St. Louis	NPAssn	145	3,066	..	..	R	3	No	None	45	40(b)	July
De Paul Hospital +	St. Louis	Church	335	8,405	25	100	R	9	No	Req	27	25	July
Evangelical Deaconess Hospital [1]	St. Louis	Church	265	7,331	..	..	R	9	No	None	21	25(b)	July
Homer G. Phillips Hospital +[1,3]	St. Louis	City	750	11,709	100	..	R	36	(57)	Req	23	25	July
Jewish Hospital +[1]	St. Louis	NPAssn	337	7,963	9	100	R	12	No	Req	33	35	July
Lutheran Hospital	St. Louis	Church	195	5,911	4	100	R	6	No	None	25	40(b)	July
Missouri Baptist Hospital +	St. Louis	Church	500	10,763	..	100	R	5	No	None	23	35(b)	July
St. Anthony's Hospital +	St. Louis	Church	298	6,737	..	..	R	8	No	None	31	25	July
St. John's Hospital +	St. Louis	Church	406	8,391	4	100	R	13	No	Req	30	25	July
St. Louis City Hospital +[1,3]	St. Louis	City.	1,104	16,516	100	..	R	53	(58)	Req	50	61	July
St. Luke's Hospital +[1]	St. Louis	Church	220	4,485	7	100	R	11	(59)	Req	38	25(b)	July
St. Mary's Group of Hospitals +[3]	St. Louis	Church	751	14,497	10	100	R	32	(60)	Req	54	15	July
St. Mary's Infirmary	St. Louis	Church	179	3,691	25	100	R	4	No	None	35	10(b)	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
MONTANA													
Murray Hospital	Butte	Corp	120	2,500	..	100	R	4	No	Req	25	108(b)	Quarterly
St. James Hospital ¹	Butte	Church	190	3,816	25	25	R	3	No	Req	..	100	June
Montana Deaconess Hospital +¹	Great Falls	Church	240	6,031	..	..	R	4	No	None	55	25	July
NEBRASKA													
Bryan Memorial Hospital ¹˒³	Lincoln	Church	134	2,953	..	75	R	3	No	None	61	100	Varies
Lincoln General Hospital +¹˒³	Lincoln	NPAssn	223	5,025	..	100	R	5	No	None	72	50	Varies
St. Elizabeth Hospital	Lincoln	Church	250	7,417	..	65	R	4	No	None	24	75	July
Bishop Clarkson Memorial Hospital +	Omaha	Church	177	5,477	..	100	R	4	No	Req	40	50	July
Creighton Memorial St. Joseph's Hosp.+¹	Omaha	Church	518	11,901	..	98	R	14	No	Req	42	25(b)	July
Immanuel Deaconess Institute	Omaha	Church	165	4,126	..	100	R	4	No	None	31	50	April
Nebraska Methodist Hospital +¹	Omaha	Church	191	5,695	..	100	R	5	No	None	50	40(b)	July
St. Catherine's Hospital	*Omaha*	*Church*	*201*	*5,270*	*10*	*80*	*R*	*4*	*No*	*None*	*22*	*50*	*July*
University of Nebraska Hospital +	Omaha	State	230	2,651	100	..	R	12	No	Req	98	25	July
NEW HAMPSHIRE													
Mary Hitchcock Memorial Hospital +	Hanover	NPAssn	190	4,071	32	100	R	9	No	None	85	8.33	July
NEW JERSEY													
Atlantic City Hospital +	Atlantic City	NPAssn	300	7,012	47	..	R	8	No	Req	34	50	July
Bayonne Hospital and Dispensary +¹	Bayonne	NPAssn	280	5,441	40	100	R	6	No	Req	26	75	Quarterly
Cooper Hospital +	Camden	NPAssn	447	8,670	55	100	R	12	No	Req	41	15	July
West Jersey Hospital +	Camden	NPAssn	341	6,382	34	100	R	8	No	Req	32	25	July
East Orange General Hospital ¹	East Orange	NPAssn	150	3,003	..	100	R	3	No	Req	23	50	July
Alexian Brothers Hospital (c)	Elizabeth	Church	168	2,848	16	..	R	4	(61)	Req	18	..	July
Elizabeth General Hospital and Dispensary ¹	Elizabeth	NPAssn	237	5,174	40	100	R	10	No	Req	19	50	July
St. Elizabeth Hospital ¹	Elizabeth	Church	260	4,396	27	..	R	8	No	Req	20	75	July
Englewood Hospital ¹˒³	Englewood	NPAssn	238	6,805	24	..	R	9	No	Req	35	50	July
Hackensack Hospital +¹	*Hackensack*	*NPAssn*	*300*	*9,007*	*35*	*20*	*R*	*11*	*No*	*Req*	*27*	*50*	*July*
St. Mary's Hospital ¹	Hoboken	Church	450	6,895	62	..	R	10	No	Req	17	50	July
Christ Hospital ¹	Jersey City	Church	285	5,995	40	..	R	12	No	Req	18	100	July
Jersey City Hospital +¹˒³	Jersey City	City	1,105	21,864	80	100	R	89	(62)	Req	18	25	Varies
St. Francis Hospital ¹	Jersey City	Church	228	4,019	21	..	R	7	(63)	Req	16	65	JanJune
Monmouth Memorial Hospital +¹˒³	Long Branch	NPAssn	306	6,652	3	..	R	9	No	Op	40	100	July
Mountainside Hospital +¹˒³	Montclair	NPAssn	368	5,834	21	50	R	12	No	Req	32	25	July
ll Souls Hospital	Morristown	Church	162	3,025	12	85	R	3	No	Req	17	..	July
orristown Memorial Hospital ¹	Morristown	NPAssn	158	3,011	27	100	R	4	No	Req	..	100	July
urlington County Hospital +	Mount Holly	NPAssn	145	2,288	35	100	R	4	No	Req	50	50	July
itkin Memorial Hospital	Neptune	NPAssn	190	6,480	..	100	R	6	No	Req	62	50(b)	July
ospital of St. Barnabas and for Women and Children +¹	Newark	Church	270	6,137	28	20	R	6	No	Req	32	104.65(a)	July
utheran Memorial Hospital	Newark	NPAssn	142	2,078	45	..	R	3	No	Req	18	50	Varies
ewark Beth Israel Hospital +¹˒³	Newark	NPAssn	441	10,657	23	100	R	12	No	Req	32	25	July
ewark City Hospital +¹˒³	Newark	City	740	11,761	100	..	R	24	No	None	24	30	July
t. James Hospital ¹	Newark	Church	167	3,247	19	..	R	2	No	Req	19	100	July
t. Michael's Hospital +	Newark	Church	420	9,169	..	100	R	8	No	Req	22	75	July
t. Peter's General Hospital	New Brunswick	Church	244	6,758	..	..	R	4	No	Req	..	75	AprJuly
range Memorial Hospital	Orange	NPAssn	475	8,724	30	..	R	8	No	Req	30	35	July
t. Mary's Hospital	Orange	Church	166	3,226	..	..	R	3	No	Req	..	75	July
assaic General Hospital	Passaic	NPAssn	302	6,080	20	15	R	4	No	Req	19	100	July
t. Mary's Hospital ¹	Passaic	Church	240	6,885	25	35	R	4	No	Req	25	50(b)	Varies
athan and Miriam Barnert Mem. Hosp.¹	Paterson	NPAssn	145	3,033	32	10	R	5	No	Req	18	50	JulyOct
aterson General Hospital +	Paterson	NPAssn	456	8,916	28	..	R	10	No	Req	26	50(b)	July
t. Joseph Hospital	Paterson	Church	468	8,124	52	20	R	10	No	Req	24	75	July
erth Amboy General Hospital	Perth Amboy	NPAssn	225	5,356	..	..	R	5	No	None	46	75	July
uhlenberg Hospital ³	Plainfield	NPAssn	330	7,640	18	100	R	8	No	Req	26	50	July
oly Name Hospital	*Teaneck*	*Church*	*235*	*5,231*	*15*	*75*	*R*	*8*	*No*	*Req*	*37*	*75*	*July*
ercer Hospital ¹	Trenton	NPAssn	287	6,917	22	78	R	8	No	Req	39	85	July
St. Francis Hospital +³	Trenton	Church	365	9,109	35	100	R	8	No	Req	34	75	July
William McKinley Memorial Hospital ¹	Trenton	NPAssn	156	3,307	20	60	R	4	No	Req	..	100	March
North Hudson Hospital ¹˒³	Weehawken	NPAssn	191	3,320	50	100	R	7	(62)	Req	20	100	Varies
NEW YORK													
Albany Hospital +¹˒³	Albany	NPAssn	571	13,482	24	100	S	23	No	Req	60	No	July
Memorial Hospital ¹	Albany	NPAssn	157	3,419	10	100	R	5	No	Op	42	75	Varies
St. Peter's Hospital	Albany	Church	159	4,600	6	..	R	5	(64)	Req	22	100	Varies
Binghamton City Hospital +¹˒³	Binghamton	City	500	9,458	20	80	R	14	No	Req	38	50	July
Beth-El Hospital +¹	Brooklyn	NPAssn	332	7,028	43	75	R	16	No	Req	32	50	July
Beth Moses Hospital +¹˒³	*Brooklyn*	*NPAssn*	*215*	*4,190*	*24*	*100*	*R*	*14*	*No*	*Op*	*23*	*75*	*JanJuly*
Brooklyn Hospital +¹	Brooklyn	NPAssn	374	7,879	47	100	R	12	No	Req	33	No	July
Bushwick Hospital	Brooklyn	NPAssn	125	3,170	..	100	R	6	No	Req	25	75	July
Coney Island Hospital +¹˒³	Brooklyn	City	200	5,050	100	..	R	16	No	Req	16	45	July
Cumberland Hospital +¹˒³	Brooklyn	City	400	6,297	100	..	R	22	No	Req	30	45	July
Greenpoint Hospital +¹˒³	Brooklyn	City	300	5,479	100	..	R	12	No	Req	24	45	July
Israel Zion Hospital +¹˒³	Brooklyn	NPAssn	507	10,677	..	75	R	36	No	Req	27	35	Varies
Jewish Hospital +¹˒³	Brooklyn	NPAssn	600	13,396	27	100	R&S	40	(65)	Req	41	10(b)	July
Kings County Hospital +¹˒³	Brooklyn	City	2,520	57,609	100	..	R&S	110	No	Req	17	45	July
Long Island College Hospital +¹	Brooklyn	NPAssn	451	8,840	30	..	S	22	(66)	Req	36	No	July
Methodist Hospital +¹	Brooklyn	Church	542	9,217	41	..	R	10	No	Op	35	No	July
Norwegian Lutheran Deaconesses' Home and Hospital +¹	Brooklyn	Church	263	5,280	45	..	R	4	No	Req	15	50	July
St. Catherine's Hospital	Brooklyn	Church	344	7,396	30	90	R	14	No	Req	18	35(b)	July
St. John's Hospital +¹	Brooklyn	Church	250	4,483	40	100	R	7	No	Req	32	25	July
St. Mary's Hospital +	Brooklyn	Church	320	6,694	22	30	R	16	No	Req	20	30	July
St. Peter's Hospital	Brooklyn	Church	201	2,593	..	..	R	6	No	None	..	75	Varies
Unity Hospital	Brooklyn	NPAssn	283	5,638	15	100	R	12	No	Op	20	50	July
Wyckoff Heights Hospital ¹	Brooklyn	NPAssn	197	4,627	25	100	R	12	No	Req	19	50	July
Buffalo General Hospital +¹˒³	*Buffalo*	*NPAssn*	*500*	*10,015*	*40*	*100*	*R*	*16*	*(67)*	*Req*	*44*	*No*	*July*
Allied Hospitals of the Sisters of Charity	Buffalo	See Sisters Hospital											
Deaconess Hospital +	Buffalo	NPAssn	333	8,285	..	..	R	8	No	Req	32	40	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
NEW YORK—Continued													
Edward J. Meyer Memorial Hospital +[1,3]	Buffalo	County	1,107	10,315	100	..	R	24	No	Req	25	92(a)	July
Mercy Hospital	Buffalo	Church	258	6,317	..	100	R	6	No	Req	17	65	JanJune
Millard Fillmore Hospital +	Buffalo	NPAssn	441	12,165	..	100	R	7	(68)	Req	31	25(b)	July
Sisters Hospital	Buffalo	Church	375	9,620	3	97	R	14	(69)	Req	18	25	July
Mary Imogene Bassett Hospital +[1]	Cooperstown	NPAssn	110	2,468	..	100	R	6	No	Req	59	50	July
Arnot-Ogden Memorial Hospital	Elmira	NPAssn	217	6,164	11	60	R	4	No	None	27	75	July
St. Joseph's Hospital	Elmira	Church	291	6,053	15	..	R	6	No	None	21	50(b)	July
Ideal Hospital [1]	Endicott	City	126	2,512	..	100	R	3	No	None	22	80	July
Flushing Hospital [1,3]	Flushing	NPAssn	319	7,824	17	57	R	10	No	Req	18	100	July
Meadowbrook Hospital +[1]	Hempstead	County	274	4,500	..	100	R	12	No	Req	44	28.75	July
Jamaica Hospital [1]	Jamaica	NPAssn	227	6,055	..	..	R	8	No	Req	25	35	Varies
Mary Immaculate Hospital +[3]	Jamaica	Church	236	9,966	40	..	R	5	No	Op	19	45	July
Queens General Hospital +[1,3]	Jamaica	City	757	12,939	100	..	R	20	No	Req	45	25(b)	July
Charles S. Wilson Memorial Hospital +[1,3]	Johnson City	NPAssn	250	8,911	..	100	R	10	No	Req	29	100(b)	July
Our Lady of Victory Hospital	Lackawanna	Church	195	4,639	3	100	R	4	(70)	Req	20	75	July
St. John's Long Island City Hospital [3]	Long Island City	Church	268	5,505	45	..	R	6	No	Req	25	50	Varies
Nassau Hospital +[1]	Mineola	NPAssn	275	6,755	18	75	R	6	No	None	..	50(b)	July
Mount Vernon Hospital +[1]	Mount Vernon	NPAssn	260	6,224	15	20	R	6	No	Req	29	75	July
St. Luke's Hospital	Newburgh	NPAssn	225	4,411	..	..	R	5	No	Req	..	50	July
New Rochelle Hospital +[3]	New Rochelle	NPAssn	309	7,659	..	..	R	10	No	Req	25	50	July
Bellevue Hospital +	New York	City	3,165	58,778	100	..	(Apply to divisions listed below)						
Division I—Columbia University +[1]			226	5,225	100	..	M&S	16	No	Req	32	45	July
Division II—Cornell University +[1]			205	5,498	100	..	M&S	29	No	Req	32	45	July
Division III—New York University +[1]			374	11,172	100	..	M&S	75	No	Req	32	45	July
Division IV—Open Division +[1,3]			207	4,846	100	..	M&S	21	No	Req	22	45	July
Beth David Hospital	New York	NPAssn	190	4,637	..	100	R	12	No	Op	26	50	JanJuly
Beth Israel Hospital +[1,3]	New York	NPAssn	408	7,622	30	100	R	12	No	Op	32	25	July
Bronx Hospital +[1,3]	New York	NPAssn	356	8,437	27	100	R	8	No	Req	24	35	July
Columbus Hospital [3]	New York	Church	300	5,961	..	100	R	8	No	Op	23	50	Quarterly
Flower and Fifth Avenue Hospitals +[1,3]	New York	NPAssn	410	9,046	31	100	S	24	No	Req	27	No	July
Fordham Hospital +[1,3]	New York	City	539	11,719	100	..	R	18	No	Req	21	45	July
French Hospital +[1]	New York	NPAssn	313	6,605	20	95	R	15	No	Op	26	20	July
Goldwater Memorial Hospital +[1,3]	New York	City	1,660	1,581	100	..	M	14	No	Req	38	45	July
Gouverneur Hospital +[1,3]	New York	City	220	3,354	100	..	R	6	(71)	Req	16	45	July
Harlem Hospital +[1,3]	New York	City	763	18,227	100	..	R	44	No	Req	17	45	July
Hospital for Joint Diseases +[1,3]	New York	NPAssn	362	5,431	26	100	R	12	(72)	Req	39	25	JanJuly
Jewish Memorial Hospital +[3]	New York	NPAssn	229	5,183	40	..	R	14	No	Op	38	50	JanJuly
Knickerbocker Hospital +[1]	New York	NPAssn	165	3,015	60	90	M	12	No	Req	44	50	July
Lebanon Hospital [1]	New York	NPAssn	172	2,124	3	100	R	7	No	Op	49	25	July
Lenox Hill Hospital +[1,3]	New York	NPAssn	620	11,039	48	80	R	20	No	Req	44	40	July
Lincoln Hospital +[1,3]	New York	City	469	10,296	100	..	R	24	No	Req	22	45	July
Memorial Hospital +[3]	New York	NPAssn	223	5,300	..	..	R	..	No	....	49	..	.....
Metropolitan Hospital +[1,3]	New York	City	1,183	10,430	100	..	R	30	No	Req	22	45	July
Misericordia Hospital	New York	Church	236	4,678	20	..	R	5	No	Req	19	50	JanJuly
Montefiore Hosp. for Chronic Diseases +[1,3]	New York	NPAssn	556	2,396	65	100	M&S	11	No	Req	51	25	July
Morrisania City Hospital +[3]	New York	City	511	10,667	100	..	R	24	No	Req	19	45	July
Mother Cabrini Memorial Hospital	New York	Church	205	3,008	53	47	R	8	No	Req	20	50	Varies
Mount Sinai Hospital +[1,3]	New York	NPAssn	850	14,826	..	..	M	35	No	Op	63	25	July
New York City Hospital +[1,3]	New York	City	880	9,330	100	..	R	24	No	Req	39	45	July
New York Hospital +[1,3]	New York	NPAssn	1,093	18,890	..	100	S	45	No	Req	60	No	July
New York Infirmary +[2,3]	New York	NPAssn	161	2,703	53	75	R	7	No	Req	48	20	JanJulyOct
New York Polyclinic Medical School and Hospital +[3]	New York	NPAssn	422	8,792	..	100	R	8	No	Req	26	(b)	July
New York Post-Graduate Medical School and Hospital +[1,3]	New York	NPAssn	406	8,584	27	100	S	10	No	Req	38	No	AprJuly
Presbyterian Hospital +[1,3]	New York	NPAssn	1,563	27,442	58	..	M&S	25	No	Req	58	No	July
Roosevelt Hospital +[1,3]	New York	NPAssn	375	8,211	60	..	S	12	No	Req	28	No	July
St. Clare's Hospital +[1,3]	New York	Church	406	8,076	31	75	R	12	No	Req	42	10	JanJuly
St. Francis Hospital [1]	New York	Church	425	7,347	40	100	R	8	No	None	..	25	JanJuly
St. Luke's Hospital +[3]	New York	NPAssn	508	8,349	58	100	M	11	No	Req	35	No	July
St. Vincent's Hospital +[1]	New York	Church	644	12,303	51	49	R	20	No	Req	42	No	July
Sydenham Hospital +[1,3]	New York	NPAssn	252	6,325	..	100	R	16	No	Req	26	50	July
United Hospital	Port Chester	NPAssn	214	5,216	23	90	R	6	No	Req	27	100	July
Vassar Brothers Hospital	Poughkeepsie	NPAssn	250	6,039	31	..	R	5	No	Req	22	100	July
Genesee Hospital +[1]	Rochester	NPAssn	262	7,141	18	100	R	10	No	Req	54	25	July
Highland Hospital +[1]	Rochester	NPAssn	257	5,909	13	85	R	12	No	Req	42	25	July
Rochester General Hospital +[1]	Rochester	NPAssn	387	11,204	19	81	R	16	(73)	Req	72	50	July
St. Mary's Hospital +[1]	Rochester	Church	390	10,907	14	100	R	12	No	Req	42	40(b)	July
Strong Memorial-Rochester Municipal Hospitals +[1,3]	Rochester	NPAssn	732	16,100	56	100	M&S	39	No	Req	72	15	July
Rockaway Beach Hospital	Rockaway Beach	NPAssn	125	2,873	46	100	R	8	No	None	43	100	July
Ellis Hospital +[1]	Schenectady	NPAssn	478	13,694	5	100	R	8	No	Req	29	60	July
U. S. Marine Hospital (Staten Island)+[1,3]	Stapleton	USPHS	1,050	15,780	100	..	R	30	(74)	Req	65	150.30	July
St. Vincent's Hospital +	Staten Island	Church	246	6,387	42	100	R	8	No	Req	20	100	July
Staten Island Hospital	Staten Island	NPAssn	300	4,567	..	..	R	8	No	Req	21	100	July
Crouse-Irving Hospital +[1]	Syracuse	NPAssn	273	6,930	30	10	R	6	No	None	25	25	July
General Hospital +[1]	Syracuse	NPAssn	170	4,251	12	..	R	4	No	Req	35	25	July
Hospital of the Good Shepherd +[1]	Syracuse	NPAssn	195	4,738	25	..	R	24	(75)	None	42	No	July
St. Joseph Hospital	Syracuse	Church	250	5,367	23	85	R	6	No	None	20	35	July
Syracuse Memorial Hospital +	Syracuse	NPAssn	330	7,803	34	75	R	(75)	(75)	None	38	No	July
Samaritan Hospital +[1]	Troy	NPAssn	212	5,310	..	36	R	6	No	Req	25	50	July
Troy Hospital	Troy	Church	296	5,488	..	..	R	5	No	Req	18	..	July
Grasslands Hospital +[1,3]	Valhalla	County	825	3,914	100	..	R	20	No	Req	51	25	July
St. Agnes Hospital	White Plains	Church	177	3,037	..	100	R	5	No	Req	25	100	July
White Plains Hospital +[1]	White Plains	NPAssn	215	5,376	20	100	R	6	No	Req	26	50	July
St. John's Riverside Hospital	Yonkers	NPAssn	220	5,479	..	..	R	6	No	Req	15	50	JulySept
St. Joseph's Hospital [1]	Yonkers	Church	188	2,831	10	100	R	5	No	Req	19	75	JanJune
Yonkers General Hospital [1]	Yonkers	NPAssn	163	4,094	16	80	R	5	No	Req	20	100	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
NORTH CAROLINA													
Charlotte Memorial Hospital +[1,3]	Charlotte	NPAssn	501	10,131	10	90	R	8	No	Req	48	40	July
Duke Hospital +[1,3]	Durham	NPAssn	604	13,019	50	100	R	52	(76)	Req	63	No	July
Lincoln Hospital	Durham	NPAssn	122	2,684	50	90	R	4	No	Req	17	25	July
Watts Hospital +[1]	Durham	NPAssn	225	8,061	8	100	R	6	No	Req	36	25	July
Rex Hospital +[1]	Raleigh	NPAssn	326	10,208	10	95	R	6	No	Req	20	105	July
St Agnes Hospital	Raleigh	Church	118	2,242	39		R	4	No	None	..	25	July
James Walker Memorial Hospital +[1]	Wilmington	NPAssn	260	8,716	9	90	R	8	No	Req	21	75	AprOct
City Hospital +[3]	Winston Salem	City	440	10,084	18	100	R	16	No	Req	20	25	July
North Carolina Baptist Hospital +[1]	Winston Salem	Church	310	6,918	35	100	S	18	(77)	Req	59	No	Varies
NORTH DAKOTA													
St Luke's Hospital +	Fargo	Church	147	5,070	..	..	R	3	No	None	35	50	Varies
Trinity Hospital +	Minot	Church	220	6,184	..	..	R	2	No	None	64	..	Varies
OHIO													
City Hospital +	*Akron*	*NPAssn*	*497*	*11,088*	*8*	*.*	*R*	*15*	*(78)*	*Req*	*35*	*30(b)*	July
Peoples Hospital +[1]	Akron	NPAssn	260	8,304	15	100	R	6	(78)	Req	35	50	July
St Thomas Hospital +	Akron	Church	245	7,593	2	100	R	5	No	Req	30	75	July
Aultman Hospital +[1]	Canton	NPAssn	318	10,137	.	95	R	6	No	None	25	50	July
Mercy Hospital +	Canton	Church	265	8,662		100	R	6	No	None	16	75	July
Bethesda Hospital +[1]	Cincinnati	Church	265	7,713	15	90	R	8	(79)	Req	57	75	July
Christ Hospital +	Cincinnati	Church	387	10,434	15	95	R	12	(79)	Req	38	30	July
Cincinnati General Hospital +[1 3]	Cincinnati	City	965	14,093	100		R	40	No	Req	36	No	July
Deaconess Hospital +[1]	Cincinnati	Church	198	4,522	15	100	R	4	(80)	Req	30	75	AprJuly
Good Samaritan Hospital +	Cincinnati	Church	628	14,729	15	30	R	14	No	Req	23	60	July
Jewish Hospital +[1]	Cincinnati	NPAssn	300	7,843	2	100	R	10	(80)	Op	38	50	July
St Mary's Hospital +	Cincinnati	Church	219	4,482	31	29	R	8	No	Req	23	75	July
City Hospital +[1 3]	Cleveland	City	1,132	13,759	100		R	24	No	Req	36	25	July
Evangelical Deaconess Hospital [1]	Cleveland	Church	164	5,590	..		R	4	No	None	22	..	July
Fairview Park Hospital +[1]	Cleveland	Church	201	6,575	4	100	R	4	No	Req	29	75	July
Lutheran Hospital +[1]	Cleveland	Church	160	4,854	2	98	R	4	No	None	45	75	July
Mount Sinai Hospital +[1 3]	Cleveland	NPAssn	262	8,459	9	100	R	12	No	Req	36	50	July
St Alexis Hospital +	Cleveland	Church	255	8,513	14	100	R	8	No	Req	31	50	July
St John's Hospital +	Cleveland	Church	275	8,022	12	100	R	8	No	None	25	50	July
St Luke's Hospital +[1 3]	Cleveland	Church	376	11,224	11	75	R	20	No	Req	47	30	June
St Vincent Charity Hospital +	Cleveland	Church	290	7,642	14	100	R	12	(81)	Req	32	50	July
United States Marine Hospital	Cleveland	USPHS	309	3,266	100		R	6	(82)	Req	50	132	July
University Hospitals +[1 3]	Cleveland	NPAssn	817	18,968	38	100	S	40	No	Req	52	No	July
Grant Hospital [1]	Columbus	NPAssn	313	9,075	10	100	R	6	No	None	26	75	July
Mount Carmel Hospital +	Columbus	Church	306	8,915	4	98	R	10	(83)	Req	34	50	July
St Francis Hospital +	Columbus	State	161	3,826	.	100	R	9	(84)	None	27	29	July
Starling Loving University Hospital +[1]	Columbus	State	314	7,386	55	100	R	12	(83)	Op	66	9	July
White Cross Hospital +	Columbus	Church	342	10,035	6	85	R	8	No	Req	32	50	July
Good Samaritan Hospital [1]	Dayton	Church	400	10,328	5	90	R	6	No	None	22	50	July
Miami Valley Hospital +[3]	Dayton	NPAssn	520	11,347	13	..	R	12	No	Req	38	50	July
St Elizabeth Hospital	Dayton	Church	370	9,811	11	..	R	6	No	Req	22	50	July
Huron Road Hospital +[1]	East Cleveland	NPAssn	352	10,528	..	100	R	8	No	Req	39	50	July
Mercy Hospital +[1]	Hamilton	Church	290	7,528	..	50	R	4	No	Req	31	100	July
Lakewood Hospital +	Lakewood	City	157	4,931	100	.	R	4	No	Req	34	25	July
Lima Memorial Hospital	Lima	NPAssn	182	5,634	8	75	R	4	No	None	24	75	April
St Rita's Hospital [1]	Lima	Church	199	5,357	41	18	R	3	No	Req	28	100	July
Springfield City Hospital	Springfield	City	332	8,473	7	50	R	6	No	Req	35	100	July
Maumee Valley Hospital +	Toledo	County	325	3,804	90		R	8	No	Req	30	75	July
Mercy Hospital +	Toledo	Church	340	9,845	20	100	R	8	No	Req	27	100	July
St Vincent's Hospital +[1]	Toledo	Church	385	11,555	8	100	R	7	No	Op	24	75	July
Toledo Hospital +[1]	Toledo	NPAssn	320	8,126	3	70	R	10	No	Req	53	75	July
St Elizabeth Hospital +[1]	Youngstown	Church	300	11,208	3	100	R	10	No	Req	24	75	July
Youngstown Hospital +[3]	Youngstown	NPAssn	632	17,616	4	100	R	15	(85)	Req	29	25(b)	July
OKLAHOMA													
St Anthony Hospital +	*Oklahoma City*	*Church*	*450*	*11,133*	*12*	*89*	*R*	*10*	*No*	*Req*	*26*	*50*	*July*
University Hospitals +[1 3]	Oklahoma City	State	418	6,070	90	10	R	17	No	Req	33	25	July
Wesley Hospital	Oklahoma City	Part	183	6,015	8	80	R	6	No	Req	20	50	July
Hillcrest Memorial Hospital +[1]	Tulsa	NPAssn	418	11,165	..	100	R	10	No	None	22	50	July
St John's Hospital	Tulsa	Church	325	9,568	33	..	R	10	No	Req	21	75	July
OREGON													
Emanuel Hospital +[1]	Portland	Church	425	11,465	..	100	R	12	No	None	43	50	July
Good Samaritan Hospital +	Portland	Church	505	13,145	10	50	R	14	No	None	53	50	July
Portland Sanitarium and Hospital	Portland	Church	190	7,629	..	100	R	5	No	None	40	104	July
Providence Hospital +	Portland	Church	237	6,322	..	.	R	6	(86)	None	27	50	July
St Vincent's Hospital +	Portland	Church	424	10,527	..	.	R	15	(87)	None	43	50	July
University of Oregon Medical School Hospitals and Clinics +[1]	Portland	State	448	6,198	89	100	R	16	No	Op	51	50	July
PENNSYLVANIA													
Abington Memorial Hospital +[3]	Abington	NPAssn	337	8,794	33	98	R	12	No	Req	47	No	July
Allentown Hospital +[1,3]	Allentown	NPAssn	307	9,542	48	52	R	10	No	Req	31	50	July
Sacred Heart Hospital +[1]	Allentown	Church	335	7,073	..	99	R	6	No	Req	28	75	July
Altoona Hospital	Altoona	NPAssn	224	5,473	..	100	R	5	No	Req	16	50(b)	July
Mercy Hospital [1]	Altoona	NPAssn	190	4,561	46		R	5	No	Op	..	110	July
St Luke's Hospital +[1 3]	Bethlehem	NPAssn	286	7,277	13	100	R	9	No	Req	43	30	JanJuly
Braddock General Hospital [1]	Braddock	NPAssn	175	4,355	9	100	R	5	No	Req	.	50	July
Bryn Mawr Hospital +[3]	Bryn Mawr	NPAssn	333	7,214	26	100	R	9	No	Req	45	No	July
Chester Hospital [1 3]	Chester	NPAssn	285	6,729	..	10	R	8	No	Req	22	75	July
George F. Geisinger Memorial Hospital +[3]	Danville	NPAssn	224	6,922		100	R	10	No	Req	51	20	July
Fitzgerald Mercy Hospital	Darby	Church	264	5,693	25	100	R	7	No	Req	78	50	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
PENNSYLVANIA—Continued													
Easton Hospital [1,3]	Easton	NPAssn	210	4,657	20	10	R	6	No	Req	21	75	April
Hamot Hospital +[1]	Erie	NPAssn	232	8,507	19	50	R	10	No	Req	21	50	July
St. Vincent's Hospital +	Erie	NPAssn	225	9,128	12	..	R	8	No	Req	..	75	July
Westmoreland Hospital [1]	Greensburg	NPAssn	230	6,395	10	..	R	6	No	None	35	..	July
Harrisburg Hospital +[1]	Harrisburg	NPAssn	368	10,256	16	75	R	10	No	Req	21	83.33	July
Harrisburg Polyclinic Hospital	Harrisburg	NPAssn	220	5,415	..	100	R	4	No	Req	26	100	July
Conemaugh Valley Memorial Hospital +[1]	Johnstown	NPAssn	407	9,003	20	100	R	10	No	Req	29	75	July
Nesbitt Memorial Hospital [1]	Kingston	NPAssn	240	4,688	18	100	R	3	No	Req	23	50(b)	July
Lancaster General Hospital [1]	Lancaster	NPAssn	301	7,353	25	100	R	8	No	Req	44	50	July
St. Joseph's Hospital +	Lancaster	Church	266	5,968	18	..	R	6	No	Req	26	100	July
McKeesport Hospital	McKeesport	NPAssn	325	7,234	13	100	R	7	No	Req	19	100	July
Montgomery Hospital [1]	Norristown	NPAssn	221	3,926	41	100	R	8	No	Req	19	50	July
Chestnut Hill Hospital [1]	Philadelphia	NPAssn	112	2,931	..	..	R	4	No	Req	41	50	July
Episcopal Hospital +[3]	Philadelphia	Church	552	8,929	..	..	R	18	No	Req	45	No	July
Frankford Hospital +[1]	Philadelphia	NPAssn	192	4,400	..	100	R	7	No	Req	15	75	July
Germantown Dispensary and Hospital +[3]	Philadelphia	NPAssn	410	6,951	60	100	R	12	No	Req	60	No	July
Graduate Hospital of the University of Pennsylvania +[3]	Philadelphia	NPAssn	461	5,347	100	10	R	16	(88)	Req	76	No	July
Hahnemann Hospital +[1,3]	Philadelphia	NPAssn	631	10,905	5	..	R	24	No	Req	46	No	July
Hospital of the University of Penn. +[1,3]	Philadelphia	NPAssn	761	16,324	61	100	R	22	No	Req	75	No	July
Hospital of the Woman's Medical College +[3]	Philadelphia	NPAssn	206	4,812	..	100	R	6	No	Req	37	No	July
Jefferson Medical College Hospital +[3]	Philadelphia	NPAssn	775	17,794	58	100	R	28	No	Req	55	No	July
Jewish Hospital +[1,3]	Philadelphia	NPAssn	425	8,665	42	100	R	18	(89)	Req	56	No	July
Lankenau Hospital +	Philadelphia	NPAssn	294	5,531	..	100	R	10	(90)	Req	59	No	July
Memorial Hospital [3]	Philadelphia	NPAssn	118	2,809	26	90	R	3	No	Req	26	100	July
Mercy Hospital [1]	Philadelphia	NPAssn	125	2,437	..	100	R	5	No	Req	17	15	July
Methodist Hospital	Philadelphia	Church	216	5,130	..	100	R	8	No	Op	26	24	July
Misericordia Hospital [1,3]	Philadelphia	Church	250	5,627	32	..	R	9	No	Req	32	No	July
Mount Sinai Hospital +[1,3]	Philadelphia	NPAssn	317	6,458	57	25	R	14	No	Req	61	No	July
Nazareth Hospital +[1]	Philadelphia	Church	185	4,712	25	100	R	4	No	Req	29	75	July
Northeastern Hospital [1,3]	Philadelphia	NPAssn	102	2,703	..	..	R	4	No	Req	21	..	July
Pennsylvania Hospital +[3]	Philadelphia	NPAssn	350	9,596	..	100	R	18	(91)	Req	44	No	July
Philadelphia General Hospital +[1,3]	Philadelphia	City	2,560	21,004	100	..	R	65	(89)	Req	70	No	July
Presbyterian Hospital +[1,2]	Philadelphia	Church	400	6,380	42	100	R	12	No	Req	59	No	July
St. Agnes Hospital	Philadelphia	Church	426	6,113	33	100	R	6	No	Req	33	75	July
St. Joseph's Hospital [1]	Philadelphia	Church	233	4,182	..	..	R	6	No	Req	18	50	July
St. Luke's and Children's Medical Center +[1]	Philadelphia	NPAssn	362	7,073	42	90	R	9	No	Req	..	75	July
St. Mary's Hospital [1]	Philadelphia	Church	280	5,290	..	100	R	8	No	Req	22	..	July
Temple University Hospital +[1,3]	Philadelphia	NPAssn	550	11,561	..	100	R	18	(92)	Req	50	No	July
Woman's Hospital +[2]	Philadelphia	NPAssn	185	3,530	34	100	R	6	No	Req	44	..	July
Women's Homeopathic Hospital +[1]	Philadelphia	NPAssn	210	3,786	51	100	R	4	No	Req	31	75	July
Allegheny General Hospital +	Pittsburgh	NPAssn	698	11,171	45	100	R	16	No	Req	23	No	July
Mercy Hospital +[1]	Pittsburgh	Church	723	13,502	35	100	R	24	(93)	Req	29	No	July
Montefiore Hospital +	Pittsburgh	NPAssn	257	6,395	·18	100	R	10	No	Req	37	25	July
Pittsburgh Hospital [1]	Pittsburgh	NPAssn	225	5,274	90	100	R	6	No	Req	20	50	July
Presbyterian Hospital +[1]	Pittsburgh	NPAssn	235	4,879	14	100	R	10	(94)	Req	27	No	July
St. Francis Hospital +[1]	Pittsburgh	NPAssn	698	11,418	..	100	R	20	(95)	Req	25	No	July
St. John's General Hospital [1]	Pittsburgh	NPAssn	250	6,079	45	55	R	6	No	Req	20	50	July
St. Joseph's Hospital and Dispensary	Pittsburgh	Church	200	4,441	..	100	R	8	No	Req	19	75(b)	July
St. Margaret Memorial Hospital +[1]	Pittsburgh	Church	150	2,822	..	100	R	4	No	Req	33	50	July
Shadyside Hospital [1]	Pittsburgh	NPAssn	337	7,309	6	100	R	10	(95)	Op	21	75	July
South Side Hospital [1]	Pittsburgh	NPAssn	240	5,273	..	100	R	7	No	Req	19	75	July
Western Pennsylvania Hospital +[1,3]	Pittsburgh	NPAssn	594	10,861	87	..	R	19	No	Req	20	No	July
Pottsville Hospital [1]	Pottsville	NPAssn	172	3,415	40	..	R	3	No	Req	15	100	July
Community General Hospital [1]	Reading	NPAssn	134	3,227	29	..	R	4	No	Req	27	150	July
Reading Hospital +[1,3]	Reading	NPAssn	356	9,936	20	100	R	10	No	Req	60	100	July
St. Joseph's Hospital +[1]	Reading	Church	220	5,553	20	75	R	6	No	Req	53	..	July
Robert Packer Hospital +	Sayre	NPAssn	325	9,160	..	35	R	10	No	Req	47	No	JanJuly
Moses Taylor Hospital [1]	Scranton	NPAssn	120	2,001	..	100	R	3	(96)	Req	22	100	July
Scranton State Hospital [1]	Scranton	State	310	5,395	63	35	R	10	No	Req	20	110	July
Sewickley Valley Hospital [1]	Sewickley	NPAssn	185	4,577	..	100	R	4	No	Req	32	100	July
Uniontown Hospital	Uniontown	NPAssn	250	6,780	27	83	R	6	No	Req	35	100	July
Washington Hospital	Washington	NPAssn	224	4,841	4	100	R	8	No	Req	16	100	July
Chester County Hospital +[3]	West Chester	NPAssn	179	4,000	45	55	R	6	No	Req	18	100	July
Mercy Hospital +[1,3]	Wilkes-Barre	Church	223	5,259	25	75	R	6	No	Req	23	50	July
Wilkes-Barre General Hospital +[1]	Wilkes-Barre	NPAssn	417	8,284	36	..	R	10	No	Req	..	50	July
Columbia Hospital +	Wilkinsburg	Church	225	5,337	14	100	R	5	No	Req	24	50	July
Williamsport Hospital +[1]	Williamsport	NPAssn	304	9,160	24	61	R	7	No	Req	31	75	July
Windber Hospital [1]	Windber	NPAssn	117	2,986	..	100	R	4	No	Req	..	75	Oct
York Hospital +[3]	York	NPAssn	248	6,161	..	..	R	8	No	Req	22	65	July
RHODE ISLAND													
Memorial Hospital [1,3]	Pawtucket	NPAssn	202	6,226	79	21	R	6	No	Req	27	50	July
Roger Williams General Hospital	Providence	NPAssn	196	4,942	11	85	R	6	No	Req	17	100	April
Rhode Island Hospital +[3]	Providence	NPAssn	492	10,727	63	100	R	24	(38)	Req	75	No	July
St. Joseph's Hospital [3]	Providence	Church	385	7,534	20	60	R	6	No	Req	38	100	July
SOUTH CAROLINA													
Roper Hospital +[1,3]	Charleston	NPAssn	535	10,193	46	100	R	20	No	Req	42	10	July
Columbia Hospital [1]	Columbia	County	494	10,983	16	..	R	10	No	Req	19	50(b)	July
Greenville General Hospital [1]	Greenville	City	362	10,397	20	100	R	8	No	Req	31	100	July
TENNESSEE													
Baroness Erlanger Hospital +[1,3]	Chattanooga	CyCo	504	16,002	34	100	R	18	(97)	Req	23	60	July
Knoxville General Hospital +[3]	Knoxville	City	325	8,933	39	100	R	9	No	Req	21	40	Quarterly
Baptist Memorial Hospital +	Memphis	Church	630	21,344	28	75	R	15	No	None	19	50	July
John Gaston Hospital +[3]	Memphis	City	550	16,602	95	100	R	24	No	Req	56	35	AprJulyOct
Methodist Hospital +[1]	Memphis	Church	300	11,293	10	25	R	10	No	None	31	50	Quarterly

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
TENNESSEE—Continued													
St. Joseph Hospital +	Memphis	Church	349	10,932	10	100	R	4	No	Req	34	50	Quarterly
George W. Hubbard Hospital +[3]	Nashville	NPAssn	181	3,087	89	95	R	7	No	Req	24	15(b)	July
Nashville General Hospital +	Nashville	City	337	5,965	77	23	R	14	No	Req	30	25	July
Protestant Hospital	Nashville	NPAssn	130	4,516	2	100	R	5	No	None	25	40(b)	July
St. Thomas Hospital +	Nashville	Church	245	8,146	24	100	S	9	(98)	None	37	30	July
Vanderbilt University Hospital +[1]	*Nashville*	*NPAssn*	*398*	*8,145*	..	..	*S*	*23*	*(99)*	*None*	*60*	No	July
Oak Ridge Hospital [1]	Oak Ridge	Fed	300	12,361	100	..	R	6	No	None	38	100	July
TEXAS													
Brackenridge Hospital [1]	Austin	City	272	6,282	32	100	R	8	No	Req	18	60	July
Baylor University Hospital +[1,3]	Dallas	Church	500	15,376	26	100	R	22	No	Req	30	37.50	July
Methodist Hospital +[3]	*Dallas*	*Church*	*250*	*8,685*	..	*100*	*R*	*6*	*No*	*Req*	*21*	*50*	July
Parkland Hospital +[1,3]	Dallas	CyCo	488	9,411	90	100	R	16	No	Req	41	10	July
St. Paul's Hospital +	Dallas	Church	340	13,617	..	100	R	16	No	Req	25	25	July
El Paso City-County Hospital	El Paso	CyCo	211	2,444	98	..	R	3	No	Req	59	75	July
City-County Hospital [3]	Fort Worth	CyCo	186	4,508	100	..	R	8	No	Req	29	25	July
Harris Memorial Methodist Hospital +[1]	Fort Worth	Church	352	10,885	10	100	R	12	No	Req	51	50(b)	July
St. Joseph's Hospital	Fort Worth	Church	305	9,619	..	100	R	6	No	None	19	100	July
John Sealy Hospital +[1]	Galveston	State	483	8,540	30	100	R	18	No	Req	62	25	July
United States Marine Hospital [3]	Galveston	USPHS	202	3,429	100	..	R	6	(100)	Req	62	70.38	July
Hermann Hospital +[1]	Houston	NPAssn	320	8,720	50	100	R	12	(101)	Req	51	20	July
Jefferson Davis Hospital +[1,3]	Houston	CyCo	493	11,480	100	..	R	20	No	Req	23	25	July
Methodist Hospital +[1]	Houston	Church	157	4,839	10	100	R	4	No	Req	35	25	July
Medical and Surgical Memorial Hospital [1]	San Antonio	NPAssn	280	10,326	..	65	R	10	No	Req	..	75	July
Nix Memorial Hospital [1]	*San Antonio*	*Corp*	*181*	*5,181*	..	*100*	*R*	*3*	*No*	*None*	*23*	*100*	July
Robert B. Green Memorial Hospital [1,3]	San Antonio	County	193	3,737	100	..	R	11	No	Req	35	25	July
Santa Rosa Hospital +	San Antonio	Church	411	12,539	8	100	R	16	No	Req	22	75	July
Kings Daughters Hospital [1]	Temple	NPAssn	126	2,133	..	100	R	3	No	None	19	100	July
Scott and White Hospital +[3]	Temple	Corp	271	6,172	..	100	R	9	(102)	Req	30	75	July
Wichita Falls Clinic Hospital	Wichita Falls	Part	110	4,512	..	100	R	3	No	Req	35	150	July
UTAH													
St. Benedict's Hospital	Ogden	Church	182	5,960	..	..	R	5	No	Req	44	50	July
Thomas D. Dee Memorial Hospital +[1]	Ogden	Church	400	10,315	..	..	R	6	No	Req	23	25	July
Dr. W. H. Groves Latter-Day Saints Hosp.+	Salt Lake City	Church	486	12,414	3	..	R	10	No	Req	29	25(b)	July
Holy Cross Hospital +[1]	Salt Lake City	Church	250	5,873	..	90	R	7	No	None	32	25(b)	July
St. Mark's Hospital +[1]	Salt Lake City	Church	244	5,234	6	100	R	6	No	None	33	75(b)	July
Salt Lake County General Hospital +[1]	Salt Lake City	County	300	3,853	77	23	R	10	No	Req	65	25(b)	July
VERMONT													
Bishop DeGoesbriand Hospital +[1,3]	Burlington	Church	140	3,691	43	99	R	2	No	None	44	50	July
Mary Fletcher Hospital +[1]	Burlington	NPAssn	230	5,411	39	100	R	7	No	Req	59	50	JulyOct
VIRGINIA													
Alexandria Hospital +[1]	Alexandria	NPAssn	225	5,417	18	100	R	6	No	None	57	50	July
University of Virginia Hospital +[1]	Charlottesville	State	519	13,257	100	..	M	25	(103)	Req	49	No	July
Chesapeake and Ohio Hospital +	Clifton Forge	NPAssn	165	5,526	96	100	R	3	No	....	43	..	.....
De Paul Hospital +[1]	Norfolk	Church	303	9,100	10	90	R	9	No	Op	70	75	July
Norfolk General Hospital +[1]	Norfolk	NPAssn	375	9,234	15	100	R	10	No	Req	58	50	July
United States Marine Hospital [3]	*Norfolk*	*USPHS*	*420*	*6,423*	*100*	..	*R*	*12*	*(104)*	*Req*	*25*	*93.05*	July
Johnston-Willis Hospital +[1]	Richmond	Corp	167	5,474	..	75	R	5	No	Req	44	25	July
Medical College of Virginia, Hosp. Div.+[1,3] (Memorial, Dooley and St. Philip Hosps.)	Richmond	State	759	14,397	58	100	RMS	42	Yes	Req	42	No	July
Stuart Circle Hospital	Richmond	Corp	137	3,845	..	100	R	3	No	None	45	25(b)	July
Jefferson Hospital +	Roanoke	NPAssn	180	4,729	..	..	R	4	No	Req	23	50	July
Lewis-Gale Hospital +	Roanoke	NPAssn	202	5,464	..	100	R	4	No	Req	25	75	July
Roanoke Hospital [1]	Roanoke	NPAssn	150	2,906	..	..	R	4	No	Req	27	100	July
WASHINGTON													
Columbus Hospital [1]	Seattle	Church	249	6,477	..	100	R	5	(105)	Req	27	50	July
Doctors Hospital +	Seattle	NPAssn	248	5,277	..	15	R	4	No	None	62	50	July
King County Hospital Unit No. 1 +[3] (Harborview)	Seattle	County	505	12,157	100	..	R	24	No	Req	40	75	July
Providence Hospital +	Seattle	Church	434	11,649	..	100	R	8	No	Req	46	50	July
Seattle General Hospital	Seattle	NPAssn	150	4,249	..	100	R	4	(106)	None	16	100	JanJuly
Swedish Hospital +	Seattle	NPAssn	374	9,700	..	..	R	10	(106)	Req	44	50	July
United States Marine Hospital [3]	Seattle	USPHS	414	6,849	100	..	R	13	No	Req	72	142	July
Virginia Mason Hospital +	Seattle	NPAssn	241	6,497	..	100	R	8	No	Req	70	50	July
Deaconess Hospital +[1]	Spokane	Church	273	8,171	..	100	R	6	(107)	None	43	85	July
Sacred Heart Hospital +	Spokane	Church	435	12,501	..	..	R	8	No	None	..	85	July
St. Luke's Hospital [1]	Spokane	NPAssn	276	7,287	..	..	R	8	No	None	63	85	July
Pierce County Hospital [1]	Tacoma	County	239	3,440	96	100	R	8	(108)	Req	47	100	July
St. Joseph's Hospital	Tacoma	Church	346	9,334	..	100	R	4	No	None	26	100	July
Tacoma General Hospital +[1]	Tacoma	NPAssn	283	7,693	..	..	R	6	No	Req	29	75	July
Northern Permanente Foundation+	Vancouver	NPAssn	360	11,087	..	..	R	8	No	Op	..	..	July
WEST VIRGINIA													
Charleston General Hospital +[1]	Charleston	NPAssn	335	10,377	50	50	R	10	No	Req	48	100	July
Kanawha Valley Hospital	Charleston	Corp	165	4,914	82	75	R	2	No	Req	30	100	July
Chesapeake and Ohio Hospital +	Huntington	NPAssn	185	3,560	..	..	R	3	No	Op	36	50	July
St. Mary's Hospital +	Huntington	Church	356	10,293	..	..	R	7	No	None	15	50(b)	July
St. Joseph's Hospital +	Parkersburg	Church	180	4,291	..	100	R	3	No	None	48	100	July
Ohio Valley General Hospital	*Wheeling*	*NPAssn*	*360*	*8,431*	*10*	*100*	*R*	*10*	*No*	*Req*	*18*	*100*	July
Wheeling Hospital [1]	Wheeling	Church	290	7,032	10	..	R	5	No	None	15	100	July

Abbreviations and other references will be found on page 1334.

Name of Hospital	Location	Control	Capacity	Total Patients Admitted	% Service Cases	% Private Patients Assigned to Interns	Type of Internship	Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Service Commences
WISCONSIN													
St. Elizabeth Hospital	Appleton	Church	244	6,578	..	100	R	3	No	None	27	..	July
Luther Hospital[1]	Eau Claire	NPAssn	200	5,495	..	100	R	4	No	None	31	50(b)	July
St. Agnes Hospital	Fond du Lac	Church	340	7,887	..	100	R	4	No	None	31	50	July
La Crosse Lutheran Hospital +[1]	La Crosse	Church	147	4,524	..	100	R	3	No	None	42	50	July
St. Francis Hospital[1]	La Crosse	Church	315	7,813	..	100	R	6	No	Req	37	100	July
Madison General Hospital +[1]	Madison	NPAssn	204	6,518	..	100	R	6	No	None	37	50	July
Methodist Hospital	Madison	Church	125	3,720	..	100	R	4	No	Req	..	65(b)	July
St. Mary's Hospital	Madison	Church	250	7,340	..	100	R	6	No	None	29	55(b)	July
State of Wisconsin General Hospital +[1]	Madison	State	772	12,037	100	..	R	20	No	Req	64	No	July
St. Joseph's Hospital[1]	Marshfield	Church	216	5,825	..	80	R	3	No	Req	22	100	July
Columbia Hospital +	Milwaukee	NPAssn	185	4,298	..	100	R	6	No	Req	49	25	July
Evangelical Deaconess Hospital	Milwaukee	Church	170	5,454	..	90	R	6	No	Req	25	75	Jan.July
Milwaukee County Hospital +[1,2]	Milwaukee	County	944	14,401	100	..	R	40	(109)	Req	53	10(b)	July
Milwaukee Hospital +	Milwaukee	Church	259	9,750	2	..	R	9	No	None	42	50	July
Misericordia Hospital	Milwaukee	Church	152	4,242	..	..	R	3	No	None	21	100	July
Mount Sinai Hospital +[1]	Milwaukee	NPAssn	217	7,315	2	100	R	5	No	Req	26	40	July
St. Joseph Hospital +	Milwaukee	Church	410	12,180	..	95	R	10	(110)	Req	25	40	JulyDec
St. Luke's Hospital +	Milwaukee	Church	130	4,889	..	100	R	4	No	None	..	..	July
St. Mary's Hospital +	Milwaukee	Church	252	8,391	..	..	R	6	No	Req	29	50	July
St. Michael's Hospital[1]	Milwaukee	Church	164	4,101	20	..	R	4	No	Req	27	75	June
Mercy Hospital[1]	Oshkosh	Church	239	6,022	..	..	R	5	No	None	..	100	July
St. Mary's Hospital	Racine	Church	271	6,693	..	100	R	4	No	None	26	75	Jan.July
CANAL ZONE													
Gorgas Hospital +	Ancon	Fed	958	16,083	100	..	R	20	No	Req	83	166.67	July
HAWAII													
Kuakini Hospital	Honolulu	NPAssn	140	5,131	..	50	R	4	No	None	20	50	August
Queen's Hospital +[1]	Honolulu	NPAssn	420	12,961	5	100	R	16	(111)	None	67	..	Varies
St. Francis Hospital[1]	Honolulu	Church	202	5,623	..	..	R	6	No	Req	41	50	Quarterly
PHILIPPINES													
Philippine General Hospital	Manila	....	...	.....	..	..	..	..	...	....	..	..	.....
PUERTO RICO													
Arecibo Charity District Hospital[1]	Arecibo	Govt	288	4,246	100	..	R	4	No	Op	23	150	April
Bayamon District Hospital	Bayamon	Govt	335	5,751	100	..	R	6	No	Req	..	150	Varies
Fajardo Charity District Hospital[1]	Fajardo	Govt	335	4,390	..	..	R	4	No	Req	17	75	July
Presbyterian Hospital[1]	San Juan	Church	130	3,788	50	100	R	4	No	Req	19	10	July

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unqualifiedly "Approved" under the Canadian plan and does not apply to that group referred to as "Commended."

The following list of hospitals, revised to April 1, 1947, has been furnished by the Canadian Medical Association.

Name of Hospital	Location
Camp Hill Hospital	Halifax, N. S.
Victoria General Hospital	Halifax, N. S.
St. John General Hospital	St. John, N. B.
Hospital du St. Sacrament	Quebec, Que.
Hospital Dieu de Quebec	Quebec, Que.
Hospital of the Infant Jesus	Quebec, Que.
Jeffrey Hale's Hospital	Quebec, Que.
Children's Memorial Hospital	Montreal, Que.
Herbert Reddy Mem. Hospital	Montreal, Que.
Homeopathic Hospital	Montreal, Que.
Hospital Notre Dame	Montreal, Que.
Hospital Ste. Jeanne d'Arc	Montreal, Que.
Hospital Ste. Justine	Montreal, Que.
Hotel Dieu de Montreal	Montreal, Que.
Hospital Ste. Luc	Montreal, Que.
Jewish General Hospital	Montreal, Que.
Montreal General Hospital	Montreal, Que.
Queen Mary Veterans Hospital	Montreal, Que.
Royal Victoria Hospital	Montreal, Que.
St. Mary's Hospital	Montreal, Que.
Ste. Anne's Hospital	Ste. Anne de Bellevue, Que.
Brantford General Hospital	Brantford, Ont.

Name of Hospital	Location
Hamilton General Hospital	Hamilton, Ont.
St. Joseph's Hospital	Hamilton, Ont.
St. Joseph's Hospital	London, Ont.
Victoria Hospital	London, Ont.
Westminster Hospital	London, Ont.
Oshawa General Hospital	Oshawa, Ont.
Ottawa Civic Hospital	Ottawa, Ont.
Ottawa General Hospital	Ottawa, Ont.
Hotel Dieu Hospital	Kingston, Ont.
Kingston General Hospital	Kingston, Ont.
Christie Street Hospital	Toronto, Ont.
Hospital for Sick Children	Toronto, Ont.
Mount Sinai Hospital	Toronto, Ont.
St. Joseph's Hospital	Toronto, Ont.
St. Michael's Hospital	Toronto, Ont.
Toronto East General Hospital	Toronto, Ont.
Toronto General Hospital	Toronto, Ont.
Toronto Western Hospital	Toronto, Ont.
Wellesley Hospital	Toronto, Ont.
Women's College Hospital	Toronto, Ont.
Grace Hospital	Windsor, Ont.
Metropolitan Hospital	Windsor, Ont.

Name of Hospital	Location
Hotel Dieu of St. Joseph	Windsor, Ont.
Children's Hospital	Winnipeg, Man.
Deer Lodge Hospital	Winnipeg, Man.
Misericordia Hospital	Winnipeg, Man.
Winnipeg General Hospital	Winnipeg, Man.
St. Boniface Hospital	St. Boniface, Man.
Regina Grey Nuns' Hospital	Regina, Sask.
Regina General Hospital	Regina, Sask.
St. Paul's Hospital	Saskatoon, Sask.
Saskatoon City Hospital	Saskatoon, Sask.
Calgary General Hospital	Calgary, Alta.
Colonel Belcher Hospital	Calgary, Alta.
Holy Cross Hospital	Calgary, Alta.
Edmonton General Hospital	Edmonton, Alta.
Misericordia Hospital	Edmonton, Alta.
Royal Alexandra Hospital	Edmonton, Alta.
University of Alberta Hosp.	Edmonton, Alta.
St. Paul's Hospital	Vancouver, B. C.
Shaughnessy Hospital	Vancouver, B. C.
Vancouver General Hospital	Vancouver, B. C.
Royal Jubilee Hospital	Victoria, B. C.
St. Joseph's Hospital	Victoria, B. C.

Abbreviations and other references will be found on page 1334.

ABBREVIATIONS AND NOTES

CyCo	City and County
Corp	Corporation unrestricted as to profit
M	Mixed
NPAssn	Nonprofit association
Op	Optional
Part	Partnership
Req	Required
R	Rotating
S	Straight
USPHS	United States Public Health Service

1. Women interns admitted.
2. Women interns only.
3 Dental interns employed.

(a) In lieu of maintenance.
(b) Bonus in addition to salary.
(c) Male patients only.

Affiliations as Referred to in Column Headed: "Affiliated Service"

4. Jefferson Tuberculosis Sanatorium, Birmingham
5. Arkansas Children's Home and Hospital, State Hospital, Little Rock, pediatrics, psychiatry
6 Santa Monica Hospital, emergency, outpatient service.
7. Compton Sanitarium, Compton, psychiatry; Children's Hospital, Los Angeles, pediatrics.
8. Children's Hospital, Los Angeles Maternity Service, pediatrics, obstetrics
9. Fairmont Hospital of Alameda County, San Leandro, and Arroyo-Del Valle Sanatorium, Livermore, medicine, surgery, tuberculosis.
10. Woman's Hospital, Pasadena, obstetrics.
11. Laguna Honda Home, San Francisco, chronic diseases; Hassler Health Home, Redwood City, tuberculosis
12 St Francis Hospital, San Francisco, obstetrics.
13. Franklin Hospital, San Francisco, obstetrics
14 Langley Porter Clinic, Children's Hospital, San Francisco, psychiatry, pediatrics; Permanente Foundation Hospital, Oakland, industrial
15 California Hospital, Los Angeles, pediatrics
16 Childrens Hospital, National Jewish Hospital, Denver, contagious diseases, tuberculosis
17. Boulder Colorado Sanitarium and Hospital.
18. Undercliff, Meriden State Tuberculosis Sanatorium, Meriden.
19 Connecticut State Hospital, Middleton, psychiatry.
20 Gallinger Municipal Hospital, Washington.
21. Children's Hospital, Eastern Dispensary and Casualty Hospital, Washington, pediatrics, emergency.
22. Children's Hospital, St Elizabeths Hospital, Washington, pediatrics, psychiatry.
23. St Elizabeth Hospital, Chicago, obstetrics, gynecology.
24. Frank Cuneo Hospital, Chicago, obstetrics, gynecology.
25 Winfield Hospital, Winfield, tuberculosis
26 Children's Memorial Hospital, Chicago, pediatrics; Lake County Tuberculosis Sanatorium, Waukegan.
27. Chicago Intensive Treatment Center.
28 Chicago Maternity Center, obstetrics, gynecology; Chicago Memorial Hospital, pediatrics
29 Children's Memorial Hospital, City of Chicago Municipal Tuberculosis Sanatorium, pediatrics, tuberculosis.
30 Indiana University Medical Center, Indianapolis, pediatrics.
31. St Bernard's Hospital, Council Bluffs, psychiatry.
32 Salvation Army Home and Hospital, Sedgwick County Hospital, Wichita, obstetrics, general.
33. St. Joseph's Hospital, Sedgwick County Hospital, Wichita.
34. Children's Free Hospital, Louisville, pediatrics; Waverly Hills Sanatorium, Waverly Hills, tuberculosis
35. Children's Free Hospital, Louisville, pediatrics
36 Shreveport Charity Hospital, pathology
37. University Hospital, Baltimore, obstetrics
38 Charles V Chapin Hospital, Providence, R. I., contagious diseases.
39. Boston Lying In Hospital
40. Wesson Maternity Hospital, Shriners Hospital for Crippled Children, Springfield, obstetrics, orthopedics.
41. Health Department Hospital, Shriners Hospital for Crippled Children, Springfield, tuberculosis, contagious diseases, orthopedics.
42. Herman Kiefer Hospital, Children's Hospital, City of Detroit Receiving Hospital
43 Herman Kiefer Hospital
44. Herman Kiefer Hospital, Children's Hospital.
45. St Joseph's Retreat, Dearborn, psychiatry; Herman Kiefer Hospital, Detroit, contagious diseases.
46 St Joseph's Retreat, Dearborn, psychiatry.
47. Grace Hospital, Detroit, obstetrics.
48. Children's Hospital, City of Detroit Receiving Hospital.
49. Herman Kiefer Hospital, Woman's Hospital, Detroit.
50. Ingham Sanatorium, Lansing, tuberculosis
51. Miller Memorial Hospital, Duluth, outpatient service.
52. St. Mary's Hospital, Minneapolis, obstetrics.
53 Gillette State Hospital for Crippled Children, St Paul.
54 Children's Hospital, St. Paul, pediatrics
55. Kansas City Municipal Tuberculosis Hospital.
56 Washington University Group of Hospitals includes Barnes Hospital, McMillan Hospital, St Louis Children's Hospital and St. Louis Maternity Hospital; Shriners Hospital for Crippled Children, City Sanitarium.
57. Robert Koch Hospital, Koch, tuberculosis.
58 City Sanitarium, St. Louis, psychiatry.
59. Shriners Hospital for Crippled Children, St Louis.
60 St Mary's Group of Hospitals includes the Firmin Desloge Hospital, St Mary's Hospital and Mount St. Rose Sanatorium.
61. St. Elizabeth Hospital, Elizabeth, obstetrics.
62. Margaret Hague Maternity Hospital, Berthold S. Pollak Hospital for Chest Diseases, Jersey City.
63. Margaret Hague Maternity Hospital, Jersey City.
64 Anthony N. Brady Maternity Home, Albany.
65. Sydenham Hospital, Baltimore, contagious diseases.
66. Brooklyn Thoracic Hospital, tuberculosis.
67. Children's Hospital, Buffalo, pediatrics
68 Edward J. Meyer Memorial Hospital, Buffalo, psychiatry, contagious diseases.
69 Allied Hospitals of the Sisters of Charity include Emergency Hospital, Louise de Marillac Hospital and Sisters Hospital.
70. Our Lady of Victory Infants' Home, Lackawanna, obstetrics, pediatrics.
71. Harlem Hospital, New York City, obstetrics.
72 Beth Israel Hospital, New York City, obstetrics.
73. Geneva General Hospital, Geneva.
74. Misericordia Hospital, New York City, obstetrics, gynecology, pediatrics
75 Rotation service established between Hospital of the Good Shepherd, Syracuse Memorial Hospital, City Hospital and Syracuse Psychopathic Hospital, comprising Syracuse University Medical Center Hospitals.
76 North Carolina Orthopedic Hospital, Gastonia, orthopedics; Sydenham Hospital, Baltimore, pediatrics.
77. Forsyth County Hospital, Winston Salem, surgery.
78 Children's Hospital, Akron, pediatrics.
79 Children's Hospital, Cincinnati, pediatrics.
80. Cincinnati General Hospital
81 St. Ann's Maternity Hospital, Cleveland.
82. Mount Sinai Hospital, Cleveland, obstetrics, gynecology.
83 Children's Hospital, Columbus, pediatrics.
84. Children's Hospital, Grant Hospital, Columbus, pediatrics, obstetrics
85. Youngstown Receiving Hospital, psychiatry.
86 St. Vincent's Hospital, Portland, obstetrics.
87. Providence Hospital, Portland, medicine, pediatrics.
88. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
89. Philadelphia Hospital for Contagious Diseases.
90. Children's Hospital of the Mary J. Drexel Home, Philadelphia, pediatrics
91. Children's Hospital, Philadelphia, pediatrics.
92 Shriners Hospital for Crippled Children, Philadelphia Hospital for Contagious Diseases
93. Rosalia Foundling and Maternity Hospital, Pittsburgh.
94. Elizabeth Steel Magee Hospital, Children's Hospital, Eye and Ear Hospital, Woman's Hospital, Western State Psychiatric Institute and Clinic, Municipal Hospital, comprising Pittsburgh University Medical Center.
95. Municipal Hospital, Pittsburgh, contagious diseases
96 Scranton State Hospital, Scranton, obstetrics.
97 T. C. Thompson Children's Hospital, Pine Breeze Sanatorium, Chattanooga, pediatrics, tuberculosis
98 Vanderbilt University Hospital, Nashville.
99. Sydenham Hospital, Baltimore, pediatrics
100 St Mary's Infirmary, Galveston, obstetrics, gynecology.
101. Southern Pacific Hospital, Houston, industrial medicine, surgery.
102 Gulf, Colorado and Santa Fe Hospital, Temple, medicine, surgery
103. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
104 Norfolk General Hospital, Norfolk, obstetrics; Kings Daughters Hospital, Portsmouth, pediatrics.
105 King County Hospital, Seattle, outpatient service.
106 Children's Orthopedic Hospital, Seattle
107. Edgecliff Sanatorium, Spokane, tuberculosis.
108 Mountain View Sanatorium, Lakeview, tuberculosis.
109. South View Hospital, Milwaukee, contagious diseases.
110 St. Michael Hospital, Milwaukee, outpatient service.
111 Kauikeolani Children's Hospital, Honolulu, pediatrics; Kalaupapa Settlement, Kalaupapa, leprosy.

APPROVED RESIDENCIES AND FELLOWSHIPS FOR VETERAN AND CIVILIAN PHYSICIANS

Council on Medical Education and Hospitals of the American Medical Association
535 North Dearborn Street, Chicago 10

Revised to August 16, 1947

Hospitals, 1,017; Assistant Residencies, Residencies and Fellowships, 12,003

The following educational services investigated and approved by the Council on Medical Education and Hospitals are considered in position to furnish acceptable residency training in accordance with standards adopted by the American Medical Association. In practically all fields these training programs have been reviewed in collaboration with the respective specialty boards. Included in the present list is the expanded number of residencies now available in those approved hospitals which have completed their plans to provide further opportunities for discharged medical officers. Many additional residencies recently organized or in process of development may soon be added to the approved list. All arrangements for appointments should be made directly with the hospital concerned in the usual manner.

The star (*) indicates hospitals that are also approved for the training of interns. All hospitals on the approved intern list are likewise accredited for general residencies which represent general house staff assignments following the internship.

The dagger (†) represents temporary approval, *pending formal inspection,* in accordance with the plan for the temporary approval of residencies in specialties as announced in The Journal A. M. A., March 2, 1946, p. 586.

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1. ALLERGY

The following services are approved by the Council and the American Board of Internal Medicine

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Outpatient Visits	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Research and Educational Hospital ★	Chicago	B. Z. Rappaport	..	8,029	12	10/1	1	$150.00
Roosevelt Hospital ★	New York City	R. A. Cooke	108	33,985	3	1/1	2-3	200.00
Montefiore Hospital ★	Pittsburgh	L. H. Criep	52	2,500	1	7/1	1-2	50.00
University of Virginia Hospital ★[1]	Charlottesville, Va.	O. Swineford Jr.	..	1,023	2	...	1	.....

2. ANESTHESIOLOGY

The following services are approved by the Council and the American Board of Anesthesiology

United States Army.—Residencies available to medical officers, U. S. Army.
†Fitzsimons General Hospital ★........Denver, Colo.

United States Navy.—Residencies available to medical officers, U. S. Navy.
†U. S. Naval Hospital ★........St. Albans, N. Y.

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Total Anesthetics	Inhalation Anesthetics	Autopsy Percentage	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Jefferson and Hillman Hospitals ★[4]	Birmingham, Ala.	A. McNeal	20,281	9,012	4,449	30	1	7/1	1	$ 30.00
†Employees Hospital of the Tennessee Coal, Iron and Railroad Company ★	Fairfield, Ala.	E. B. Robinson Jr.	6,908	2,648	1,610	41	1	7/1	1-2	200.00
Los Angeles County Hospital ★[4]	Los Angeles	C. F. McCuskey and J. B. Dillon	54,593	7,979	2,012	33	12	Varies	2	157.20
White Memorial Hospital ★[4]	Los Angeles	L. Lee	8,574	5,485	1,282	44	3	....	1-3	30.00
†Peralta Hospital [4]	Oakland, Calif.	F. E. Davis	8,128	.....	.....	28	3	1/1, 7/1	2	125.00
Samuel Merritt Hospital	Oakland, Calif.	B. M. Anderson	8,312	4,854	3,166	57	2	1/1, 7/1	1-2	110.00
†Children's Hospital ★[4]	San Francisco	H. Lapp	7,010	3,261	2,684	57	2	....	1	.....
Franklin Hospital ★[4]	San Francisco	J. L. Cardwell	6,636	4,399	2,802	33	2	1/1	1-2	100.00
Stanford University Hospitals ★[4]	San Francisco	W. B. Neff	10,127	7,146	2,981	44	4	7/1	1-2	50.00
University of California Hospital ★[4]	San Francisco	F. J. Murphy	7,518	4,878	2,669	69	3	7/1	1	50.00
†Veterans Administration Hospital	San Francisco	W. B. Neff	3,581	367	.....	41	3	Varies	1-3	275.00
†Veterans Administration Center	W. Los Angeles, Calif.	H. A. E. Wenger	10,269	2,550	90	40	6	7/1	2-3	275.00
Hartford Hospital ★[4]	Hartford, Conn.	R. M. Tovell	22,825	20,693	9,902	44	20	Quarterly	1-2	50.00
†St. Francis Hospital ★[4]	Hartford, Conn.	S. J. Martin	15,592	11,139	.....	31	10	4/1, 7/1	1-3	50.00
Grace-New Haven Community Hospital †New Haven Unit ★	New Haven, Conn.	F. L. Herrick	10,794	6,001	5,435	51	1	7/1	1-3	40.00
†Waterbury Hospital ★	Waterbury, Conn.	F. C. Wilcox Jr.	9,860	5,694	2,139	39	2	Varies	1-2	75.00
†Memorial Hospital ★[4]	Wilmington, Del.	R. D. Saunders	5,222	2,718	.....	52	3	....	1-3	100.00
†Doctors Hospital ★	Washington, D. C.	D. Stubbs	8,487	5,545	.....	65	2	7/1	1-3	100.00
†Gallinger Municipal Hospital ★[4]	Washington, D. C.	L. H. Mousel and D. Stubbs	17,636	5,061	2,898	44	7	7/1	1-3	75.00
†George Washington University Hospital ★	Washington, D. C.	L. H. Mousel	2,886	1,424	609	48	5	....	1	.....
†Veterans Administration Hospital	Washington, D. C.	L. M. Jones	3,385	1,880	150	48	2	1/1	1-3	275.00
University Hospital ★[4]	Augusta, Ga.	P. P. Volpitto	11,416	5,527	4,003	30	3	7/1	1-2	40.00
Michael Reese Hospital ★[4]	Chicago	B. Stodsky	14,830	6,117	4,129	66	6	....	1-2	50.00
†Mount Sinai Hospital ★[4]	Chicago	R. Weyl	7,320	3,850	3,097	40	1	7/1	1	50.00
†Passavant Memorial Hospital ★[4]	Chicago	M. Karp	5,800	3,541	2,843	69	1	....	1	.....
Research and Educational Hospitals ★[4]	Chicago	W. H. Cassels	5,945	2,673	1,679	90	5	7/1	1-3	55.00
St. Luke's Hospital ★[4]	Chicago	W. A. Conroy	14,303	9,524[b]	3,949[b]	59	5	7/1	1-3	25.00
University of Chicago Clinics ★[4]	Chicago	H. L. Adams	11,779	8,266	6,473	83	5	7/1	1-2	25.00

Numerical and other references will be found on page 1375.

2. ANESTHESIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated[6]	Total Anesthetics	Inhalation Anesthetics	Autopsy Percentage	Asst. Res. and Residencies[8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Wesley Memorial Hospital ★[4]	Chicago	M. Karp	12,511	6,820	4,206	62	2	1/1, 7/1	1-3	25.00
Evanston Hospital ★	Evanston, Ill.	J. E. Remlinger	8,096	4,304	3,533	80	5	....	3	50.00
Indianapolis City Hospital ★	Indianapolis	L. B. Mueller	10,565	9,144	2,183	41	2	....	1	.....
Methodist Hospital ★[4]	Indianapolis	J. Whitehead	20,765	14,818	10,570	33	4	7/1	1-2	200.00
†Veterans Administration Hospital[4]	Indianapolis	L. B. Mueller	4,845	1,116	185	26	2	Varies	1-5	275.00
†Ball Memorial Hospital ★[4]	Muncie, Ind.	W. B. Adams	9,778	4,912	2,620	31	2	7/1	1-2	125.00
†Memorial Hospital ★	South Bend, Ind.	R. Rosenheimer	9,229	.....	.....	34	1	7/1	2	100.00
†Veterans Administration Hospital	Des Moines, Ia.	S. C. Cullen	4,485	803	.....	19	1	Varies	1-3	275.00
University Hospital ★[4]	Iowa City	S. C. Cullen	18,496	8,289	4,727	56	9	7/1	1	40.00
University of Kansas Hospitals ★[4]	Kansas City, Kan.	P. Lorhan	8,181	.....	.....	50	2	....	1	.....
Louisville General Hospital ★	Louisville, Ky.	M. Davis	12,006	3,296	995	33	3	....	1	.....
Charity Hospital of Louisiana ★[4]	New Orleans	J. Adriani	41,419	15,200	8,670	49	8	7/1	1-3	25.00
†Central Maine General Hospital ★[4]	Lewiston, Maine	G. Clapperton	6,628	3,428	2,466	65	2	1/1, 7/1	1-2	100.00
†Beverly Hospital ★	Beverly, Mass.	J. H. Fine	4,649	2,627	613	80	1	....	1-2	75.00
†Boston City Hospital ★[4]	Boston	S. C. Wiggin	36,888	11,356[b]	4,114[b]	19	4	....	1	50.00
Faulkner Hospital ★	Boston	....	3,222	2,039	334	50	1	11/1	1	75.00
Lahey Clinic[4]	Boston	U. H. Eversole	.....	10,000[b]	6,000[b]	..	10	....	1-3	.....
Massachusetts General Hospital ★	Boston	H. K. Beecher	7,227	10,077	.....	54	7	....	1-3	41.67
Massachusetts Memorial Hospitals ★[4]	Boston	J. Arrowood	7,861	9,258	1,194	70	2	9/1	1	50.00
New England Hospital for Women and Children ★[4]	Boston	E. Bartlett	4,536	3,521	2,761	35	2	....	1	.....
†St. Elizabeth Hospital ★[4]	Boston	L. P. Zentgraf	6,269	5,170	2,619	21	1	6/1	1	75.00
†Veterans Administration Hospital	Boston	B. Steinberg	4,322	767	144	41	1	11/1	1-2	150.00
†Cambridge City Hospital ★	Cambridge, Mass.	J. J. Buskirk	6,539	4,890	2,725	34	1	1/1	1-2	.....
†Mount Auburn Hospital ★[4]	Cambridge, Mass.	J. H. Buskirk	6,509	4,542	2,267	15	2	1/1, 7/1	1	50.00
Newton-Wellesley Hospital ★[4]	Newton, Mass.	R. S. Hunt	5,608	3,831	2,510	34	1	1/1	1-3	100.00
†Salem Hospital ★	Salem, Mass.	R. R. Richardson	5,788	3,702	2,351	32	1	....	1	50.00
City of Detroit Receiving Hospital ★[4]	Detroit	I. B. Taylor	16,816	5,071	1,220	25	2	7/15	1	149,67
Providence Hospital ★	Detroit	N. Bittrick	12,873	7,087	4,398	73	2	....	1	.....
†Butterworth Hospital ★[4]	Grand Rapids, Mich.	M. L. Byrd	10,765	6,083	2,053	33	1	7/1	1-2	100.00
University Hospitals ★[4]	Minneapolis	R. Knight	8,960	4,168	2,817	75	9	7/1	1-3	100.00
†Veterans Administration Hospital	Minneapolis	J. R. Paine and R. Knight	7,142	3,917	579	47	12	Varies	1-3	275.00
Mayo Foundation	Rochester, Minn.	J. S. Lundy	(See page 1375)				10	....	1	.....
†Ancker Hospital ★	St. Paul.	R. Knight	7,072	1,186	621	68	1	....	1	.....
†Research Hospital ★[4]	Kansas City, Mo.	F. Hurwitt	6,913	4,000	2,000	56	2	7/1	1-3	100.00
West Jersey Hospital ★	Camden, N. J.	K. S. Russell	6,382	2,864	1,504	32	2	7/1	1	75.00
Jersey City Hospital ★	Jersey City, N. J.	W. Gleeson	21,861	9,000	3,000	18	5	Varies	1-2	35.00
Albany Hospital ★[4]	Albany, N. Y.	B. Etsten	13,482	6,357	4,760	60	5	7/1	1	41.67
†Beth-El Hospital ★[4]	Brooklyn	J. Herzlick	7,028	5,717	1,605	32	2	1/1	1-2	100.00
†Beth Moses Hospital ★[4]	Brooklyn	L. Spielberger	4,190	2,011	731	23	1	1/1	1-3	100.00
Jewish Hospital ★[4]	Brooklyn	I. M. Pallin	13,296	8,162	2,568	41	6	1/1	3	120.00
†Methodist Hospital ★[4]	Brooklyn	R. Waelsch	9,217	9,229	2,501	35	1	7/1	1-2	25.00
Buffalo General Hospital ★	Buffalo	C. J. Durshordwe	10,015	6,197	2,563	44	1	7/1	1-3	50.00
Bellevue Hospital, Div. III-N. Y. Univ. ★[4]	New York City	E. A. Rovenstine	58,778	18,000	12,000	32	12	1/1, 7/1	2-3	70.00
†Beth Israel Hospital ★[4]	New York City	S. G. Hershey	7,622	3,322	1,826	32	2	7/1	1-2	50.00
Flower and Fifth Avenue Hospitals ★[4]	New York City	D. E. Brace	9,016	7,610	5,336	27	3	7/1	1	.....
French Hospital ★[4]	New York City	S. H. Lesinger	6,605	3,022	2,383	26	1	....	1	.....
†Goldwater Memorial Hospital ★[4]	New York City	E. A. Rovenstine	1,581	292	162	38	2	7/1	1	100.00
Hospital for Joint Diseases ★[4]	New York City	B. Rapoport	5,434	3,677	2,287	39	2	9/1	1-3	40.00
†Hospital for Special Surgery[4]	New York City	C. Burstein	2,858	2,199	1,821	55	2	1/1, 7/1	1-2	100.00
Metropolitan Hospital ★[4]	New York City	F. E. Fierro	10,430	2,126	1,179	22	5	7/1	1	100.00
†Montefiore Hospital for Chronic Diseases ★[4]	New York City	B. Cohen	2,396	.....	.....	51	1	7/1	1-2	50.00
Mount Sinai Hospital ★[4]	New York City	B. H. Eliasberg	14,826	7,656	5,628	63	1	1/1, 7/1	1	50.00
†New York Hospital ★[4]	New York City	M. Ward	18,899	13,296	6,732	60	1	7/1	1	83.33
New York Polyclinic Medical School and Hospital ★	New York City	S. Resnick	8,792	6,105	3,415	26	3	7/1	2	100.00
New York Post-Graduate Medical School and Hospital ★[4]	New York City	S. Robertazzi	8,584	4,939	3,694	38	7	Varies	1-2	75.00
Presbyterian Hospital ★[4]	New York City	V. Apgar	27,442	16,134	10,844	58	8	....	2	41.66
St. Luke's Hospital ★	New York City	G. E. Burford Jr.	8,349	6,294	3,117	36	3	Varies	1-3	125.00
St. Vincent's Hospital ★[4]	New York City	G. Van Gilluwe	12,363	4,673	3,006	42	2	1/1	1-3	50.00
†Sydenham Hospital ★	New York City	M. C. Fischman	6,325	1,883	1,211	26	1	7/1	1	100.00
†Rochester General Hospital ★[4]	Rochester, N. Y.	S. L. Sahler	11,204	8,141	4,877	72	2	7/1	1-3	60.00
Grasslands Hospital ★[4]	Valhalla, N. Y.	H. F. Bishop	3,914	883	458	51	1	7/1	1-3	75.00
†Duke Hospital ★[4]	Durham, N. C.	R. Martin	13,049	7,003	5,810	63	4	7/1	2-3	.....
Cincinnati General Hospital ★	Cincinnati	....	14,093	3,401	1,915	36	1	....	1	.....
Cleveland Clinic Foundation Hospital[4]	Cleveland	D. E. Hale	7,447	8,180	1,660	35	1	7/1	1-3	100.00
†Mount Sinai Hospital ★	Cleveland	C. Stein	8,459	6,245	3,563	36	2	7/1	1	100.00
St. Luke's Hospital ★	Cleveland	B. B. Sankey	11,224	8,036	3,533	47	2	1/1, 7/1	2	75.00
Starling-Loving University Hospital ★[4]	Columbus, Ohio	N. E. Lenahan	7,386	5,034	1,249	66	2	7/1	1-3	50.00
Huron Road Hospital ★[4]	East Cleveland, Ohio.	R. J. Whitacre	10,528	9,332	3,143	39	4	....	2	100.00
†Lakewood Hospital ★	Lakewood, Ohio	S. Gardner	6,083	5,367	1,360	41	1	7/1	1-2	100.00
†*Mansfield General Hospital*[4]	Mansfield, Ohio	C. Damron	5,788	2,830	1,673	12	2	1/1, 7/1	1-2	100 00
University Hospitals ★[4]	Oklahoma City	A. D. Foster	6,070	3,137	2,585	33	2	7/1	1-2	35.00
University of Oregon Medical School Hospitals and Clinics ★[4]	Portland, Ore.	J. H. Hutton	6,198	10,044	2,002	51	3	7/1	2	75.00
†Veterans Administration Hospital	Portland, Ore.	J. H. Hutton	4,710	1,211	282	44	3	10/1	1-2	275.00
†Abington Memorial Hospital ★	Abington, Pa.	R. Maio	8,794	5,179	3,053	47	2	7/1	1-2	100.00
†Harrisburg Hospital ★[4]	Harrisburg, Pa.	E. F. Toth	10,256	7,075	4,776	31	3	7/1	1-3	100.00
†Conemaugh Valley Memorial Hospital ★[4]	Johnstown, Pa.	D. Ritter	9,093	4,151	2,531	20	1	10/1	1	150.00
Hahnemann Hospital ★[4]	Philadelphia	H. S. Ruth	10,995	.....	.....	46	2	....	1	.....
Hosp. of the University of Pennsylvania ★[4]	Philadelphia	R. D. Dripps	16,324	13,282	5,700	75	12	1/1, 7/1	1-3	100.00
†Lankenau Hospital ★	Philadelphia	F. J. Audin	5,534	5,762	3,607	59	1	7/1	1-3	100.00
†Mount Sinai Hospital ★[4]	Philadelphia	A. T. Rose	6,458	3,480	1,441	61	2	6/1, 12/1	1-2	100.00
†Philadelphia General Hospital ★[4]	Philadelphia	J. E. Ruben	21,004	3,440	1,242	70	1	Varies	1-3	70.00
Presbyterian Hospital ★[4]	Philadelphia	F. P. Haugen	6,380	3,978	2,044	59	1	....	1-3	50.00
Temple University Hospital ★[4]	Philadelphia	C. B. Hickcox	11,561	9,201	4,119	50	3	7/1	3	50.00
†Women's Homoeopathic Hospital ★[4]	Philadelphia	E. P. Van Tine	3,782	1,335	1,069	31	1	Varies	1-2	50.00
Reading Hospital ★[4]	Reading, Pa.	P. D. Woodbridge	9,936	6,073	3,708	60	3	....	1	125.00
†Christian H. Buhl Hospital	Sharon, Pa.	M. E. Cushnie	7,531	2,119	1,042	21	2	7/1	1-2	100.00
Rhode Island Hospital ★	Providence, R. I.	M. Saklad	10,727	6,653	3,496	75	3	7/1	1-2	50.00
†Baroness Erlanger Hospital ★	Chattanooga, Tenn.	H. M. Ausherman	16,002	3,405[b]	2,608[b]	23	1	7/1	1	75.00
†John Gaston Hospital ★	Memphis, Tenn.	R. A. Hingson	16,602	4,807	3,027	56	2	4/1 7/1	1-2	30.00
†Veterans Administration Hospital	Memphis, Tenn.	N. H. Rupp	.....	.....	.....	..	10	Quarterly	3	275 00
†Vanderbilt University Hospital ★[4]	Nashville, Tenn.	B. H. Robbins	8,145	4,175	3,135	60	3	7/1	1-3	25.00
†Baylor University Hospital ★	Dallas, Texas	E. F. Weir	15,376	12,721	9,000	30	1	7/1	2-3	50.00
†Veterans Administration Hospital	Dallas, Texas	E. F. Weir	3,386	763	348	17	2	Varies	2-3	.....
John Sealy Hospital ★[4]	Galveston, Texas	H. C. Slocum	8,540	4,011	3,300	62	6	....	1-3	50.00
†Hermann Hospital ★[4]	Houston, Texas	L. F. Schuhmacher Jr.	8,720	3,938	1,387	51	1	7/1	1-3	50.00
†Veterans Administration Hospital	McKinney, Texas	F. A. D. Alexander	.....	.....	.....	..	4	Varies	2	275.00

Numerical and other references will be found on page 1375.

2. ANESTHESIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated *	Total Anesthetics	Inhalation Anesthetics	Autopsy Percentage	Asst. Res. and Residencies *	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Dr. W. H. Groves Latter-Day Saints Hospital *[4]	Salt Lake City	S. Smith	12,411	6,029	4,520	29	3	7/1	1-3	100.00
†Bishop DeGoesbriand Hospital *[4]	Burlington, Vt	J. Abajian Jr.	3,691	1,729	951	44	1	....	1	.....
Mary Fletcher Hospital *[4]	Burlington, Vt	J. Abajian Jr.	6,411	2,901	771	59	1	7/1	1-2	100.00
State of Wisconsin General [illegible]	[illegible]	R. M. Waters	12,077	4,702	3,976	64	6	7/1	2	25.00
Columbia Hospital *	[illegible]	O. Shortz	4,398	2,011	2,000	49	1	7/1	3	50.00
†Mt. Sinai Hospital *[4]	Milwaukee	W. S. Phillips	7,315	4,654	2,000	26	1	Varies	2	.....
†Veterans Administration Hospital	Milwaukee	R. Foregger	7,022	2,524	.....	55	4	Varies	2-3	275.00

Hospitals, 131; Assistant Residencies and Residencies, 429

3. CARDIOVASCULAR DISEASE

United States Army.—Residencies available to medical officers, U. S. Army.
†Walter Reed General Hospital *..................Washington, D. C.

Name of Hospital	Location	Chief of Service	Inpatients Treated *	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies *	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Indiana University Medical Center *[4]	Indianapolis	G. Bond	.....	186	.....	..	2	....	1	$ 23.33
House of the Good Samaritan [4]	Boston	H. B. Sprague	137	544	5	3	3	7/1	1-3	50.00
Massachusetts General Hospital *	Boston	P. D. White	(Included in Internal Med.)				1	....	1	.....
Henry Ford Hospital *[4]	Detroit	F. J. Smith	959	11,025	114	42	6	7/1	1-3	200.00
†Hospital of the Woman's Medical College of Pennsylvania *	Philadelphia	W. G. Leaman	.....	500	.....	..	2	7/1	1-2	100.00
Pennsylvania Hospital *	Philadelphia	J. B. VanderVeer	.....	2,220	.....	..	2	1/1	1-3	25.00
†Philadelphia General Hospital *	Philadelphia	T. M. McMillan	903	4,008	526	261	1	7/1	1	70.00
St. Francis Hospital *	Pittsburgh	A. P. D'Zmura	291	(Inc. in Int. Med.)			1	....	1	100.00
Rhode Island Hospital *	Providence, R. I.	F. T. Fulton	.....	561	.....	..	1	4/1	1	50.00

Hospitals, 9; Assistant Residencies and Residencies, 19

4. CONTAGIOUS DISEASES

United States Navy.—Residencies available to medical officers, U. S. Navy.
U. S. Naval Hospital *..............................Great Lakes, Ill.

Name of Hospital	Location	Chief of Service	Inpatients Treated *	Deaths	Autopsies	Asst. Res. and Residencies *	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Los Angeles County Hospital *[4]	Los Angeles	A. G. Bower	3,412	195	115	3	Varies	1	.....
Children's Hospital *[4]	San Francisco	E. B. Shaw	529	19	11	1	12/1	1-2	$ 50.00
J. J. McCook Memorial Hospitals *[4]	Hartford, Conn.	C. L. Thenebe	722	46	18	1	....	1	.....
Cook County Hospital *[4]	Chicago	A. L. Hoyne	1,403	91	51	1	Varies	1-3	27.50
Municipal Contagious Disease Hospital [4]	Chicago	A. L. Hoyne	1,022	109	70	6	....	1	135.50
Sydenham Hospital [4]	Baltimore	H. L. Hodes	1,110	45	30	4	7/1	1	100.00
Boston City Hospital *[4]	Boston	E. H. Place	1,514	11	4	2	....	1	50.00
Massachusetts Memorial Hospitals *[4]	Boston	C. Wesselhoeft	1,202	23	24	3	1/1, 3/1	1	50.00
Belmont Hospital [4]	Worcester, Mass.	H. J. Hartnett	365	5	3	2	....	1	155.00
Herman Kiefer Hospital [4]	Detroit	D. C. Young	1,969	65	55	5	7/1	1+	333.00
Kansas City General Hospital No. 1 *	Kansas City, Mo.	C. R. Ferris	327	27	24	1	....	1	50.00
St. Louis City Hospital *[4]	St. Louis		1,093	109	44	8	7/1	1	141.00
Essex County Hosp. for Contagious Dis.[4]	Belleville, N. J.	E. L. Smith	2,581	41	13	7	1/1, 7/1	1	125.00
Kingston Avenue Hospital [4]	Brooklyn	H. L. Barnes	4,049	59	17	7	7/1	1	130.00
Queens General Hospital *[4]	Jamaica, N. Y.	H. A. Reisman	517	9	7	1	....	1	70.00
Willard Parker Hospital [4]	New York City	B. W. Hamilton	4,108	42	24	16	Varies	1	130.00
City Hospital *[4]	Cleveland	J. A. Toomey	2,058	86	40	3	7/1	1-4	50.00
Philadelphia Hosp. for Contagious Dis.[4]	Philadelphia	A. C. LaBoccetta	3,700	73	37	4	....	1+	60.00

Hospitals, 18; Assistant Residencies and Residencies, 70

5. DERMATOLOGY AND SYPHILOLOGY

The following services are approved by the Council and the American Board of Dermatology and Syphilology
(See footnotes 1, 2 and 3 for number of years credit)

United States Army.—Residencies available to medical officers, U. S. Army.
Walter Reed General Hospital *[2]..................Washington, D.C.
Brooke General Hospital *[1]......................San Antonio, Tex.

United States Navy.—Residencies available to medical officers, U. S. Navy.
U. S. Naval Hospital *[2]..........................St. Albans, N. Y.
U. S. Naval Hospital *[2]..........................Philadelphia

Name of Hospital	Location	Chief of Service	Inpatients Treated [5]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [5]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Jefferson and Hillman Hospitals *[2,4]	Birmingham, Ala.	R. Noojin	.....	2,153	....	--	1	7/1	1	$ 30.00
Los Angeles County Hospital *[3,4]	Los Angeles	S. Ayers Jr. and M. E. Obermeyer	846	12,502	14	6	8	Varies	3	157.20
Stanford University Hospitals *[1,4]	San Francisco	O. E. L. Schmidt	53	14,579	....	--	1	7/1	1-2	50.00
Universit[illegible] *[3,4]	San Francisco	H. E. Miller	10	6,417	....	--	8	7/1	1	70.00
†Veterans [illegible]	Van Nuys, Calif.	M. E. Obermeyer	22	15,946	....	1	1	1/1, 7/1	1-5	275.00
†Veterans [illegible]	W. Los Angeles, Calif.	T. Sternberg	470	24,277	---	5	4	Varies	3	275.00
Colorado [illegible]	Denver	O. S. Philpott	48	610	5	1	1	7/1	1	65.00
Georgeto[illegible]	Washington, D. C.	F. Eichenlaub	45	1,275	2	--	2	....	1-3	.....
†Alto Medical Center [1,22]	Alto, Ga.	C. D. Bowdoin	3,727	.....	....	--	1	....	1	.....

Numerical and other references will be found on page 1375.

5. DERMATOLOGY AND SYPHILOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Chicago Intensive Treatment Center [1,22]	Chicago	H. Bundesen	6,711	26,007	....	..	2	Varies	1+	194.00
†Cook County Hospital ★[2,4]	Chicago	T. Cornbleet	316	9,678	18	3	2	Varies	1-3	27.50
†Michael Reese Hospital ★[1,4]	Chicago	R. H. Rattner	21	5,630	....	..	1	....	1-2	25.00
Northwestern Univ. Medical Center ★[3,4]	Chicago	E. A. Oliver	1,258[b]	36,000[b]	....	..	1	....	1-3	.....
Research and Educational Hospitals ★[3]	Chicago	F. E. Senear	35	9,383	5	..	1	7/1	1-3	55.00
University of Chicago Clinics ★[3]	Chicago	S. Rothman	92	6,239	1	1	4	7/1	1-3	25.00
†Veterans Administration Hospital [2]	Hines, Ill.	E. A. Oliver	100	1,848	4	4	2	1/1	1-3	300.00
†Indianapolis City Hospital ★[3]	Indianapolis	J. R. Brayton	417	15,612	2	..	1	....	1-3	.....
University Hospitals ★[3,4]	Iowa City	R. Nomland	406	3,010	7	5	2	7/1	1	40.00
†University of Kansas Hospitals ★[1]	Kansas City, Kans.	C. C. Dennie	163	9,569	....	..	2	....	1	.....
†Louisville General Hospital ★[1]	Louisville, Ky.	A. B. Loveman	.....	6,694	....	..	1	1/1, 7/1	1-3	150.00
Charity Hospital of Louisiana ★[3,4]	New Orleans	....	302	11,050	5	2	5	7/1	1-3	25.00
Johns Hopkins Hospital ★[1,22]	Baltimore	J. E. Moore	.....	5,735	....	..	3	7/1	1+	.....
†University Hospital ★[2,4]	Baltimore	H. M. Robinson Sr.	.....	11,138	....	..	2	9/1	1-2	None
†Veterans Administration Hospital [2,21]	Fort Howard, Md.	M. Sullivan	.....	.....	....	..	2	Varies	3	275.00
Boston City Hospital ★[2]	Boston	J. G. Downing	147	20,709	3	1	1	....	1-2	50.00
Massachusetts General Hospital ★[3]	Boston	C. G. Lane	287	15,719	6	4	5	7/1	1-3	41.66
Massachusetts Memorial Hospitals ★[1]	Boston	J. G. Downing and W. L. Fleming	.....	22,170	....	..	1	1/1	1	50.00
University Hospital ★[3,4]	Ann Arbor, Mich.	A. C. Curtis	685	9,238	8	4	7	Varies	1-3	101.40
City of Detroit Receiving Hospital ★[3,4]	Detroit	L. Shaffer	70[b]	4,949[b]	2	2	6	7/15	1	149.66
Minneapolis General Hospital ★[3,4]	Minneapolis	S. E. Sweitzer	291	7,326	5	3	2	....	1-3	100.00
University Hospitals ★[3,4]	Minneapolis	H. E. Michelson	140	6,003	3	2	1	7/1	1-3	100.00
†Veterans Administration Hospital [3]	Minneapolis	H. E. Michelson	396	.....	2	2	3	Varies	1	303.33
Mayo Foundation [3]	Rochester, Minn.	P. A. O'Leary	(See page 1375)				10	....	1	.....
Ancker Hospital ★[2]	St. Paul	J. Madden	214	2,905	7	3	1	....	1-3	.....
†Brookhaven Medical Center [1,22]	Brookhaven, Miss.	J. G. Thompson	7,989	.....	....	..	1	....	1	.....
Barnard Free Skin and Cancer Hospital [3]	St. Louis	R. Weiss	62	11,236	1	1	4	1/1	1-3	25.00
†St. Mary's Group of Hospitals ★[3]	St. Louis	G. V. Stryker	163	13,182	2	1	2	Varies	1-3	35.00
Kings County Hospital ★[1]	Brooklyn	L. Frank	859	13,239	17	2	2	1/1, 7/1	1-2	70.00
Buffalo General Hospital ★[2]	Buffalo	E. D. Osborne	71	3,520	2	1	2	7/1	1-3	25.00
Edward J. Meyer Memorial Hospital ★[3,4]	Buffalo	E. D. Osborne	601	14,285	5	2	3	7/1	3	100.00
Bellevue Hospital, Div. III-N. Y. Univ. ★[3,4]	New York City	F. C. Combes	5,302	47,896	18	..	10	Varies	3	70.00
Columbia-Presbyterian Medical Center ★[3,4]	New York City	A. B. Cannon	64	43,795	....	..	2	....	1-3	75.00
†Hospital for Joint Diseases ★[1,4]	New York City	P. Gross	14	3,397	....	..	1	9/1	1	40.00
†Mount Sinai Hospital ★[2,4]	New York City	S. Peck	101	19,475	....	..	1	7/1	1-2	None
New York City Hospital ★[1,4]	New York City	A. B. Cannon	648	7,663	11	6	3	7/1	1	120.00
New York Hospital ★[3,4]	New York City	G. M. Lewis	.....	20,798	....	..	2	....	1	.....
†New York Polyclinic Medical School and Hospital ★[1]	New York City	A. H. Montgomery	21	7,523	1	..	1	....	1	.....
New York Post-Graduate Medical School and Hospital ★[3]	New York City	G. M. MacKee	189	114,691	1	1	3	7/1, 9/8	1-2	.....
†Roosevelt Hospital ★[1]	New York City	G. C. Andrews	.....	8,912	....	..	1	7/1	1-3	25.00
†St. Luke's Hospital ★[2]	New York City	L. P. Barker	.....	13,247	....	..	1	Varies	1-2	50.00
†Veterans Administration Hospital [2]	New York City	J. G. Hopkins	520	3,270	....	..	4	7/1	1-3	303.33
Duke Hospital ★[3,4]	Durham, N. C.	J. L. Callaway	255	7,313	....	..	1	7/1	1	83.33
Cincinnati General Hospital ★[3]	Cincinnati	L. Goldman	420	3,304	13	9	2	7/1	1-2	.....
City Hospital ★[3,4]	Cleveland	H. N. Cole	1,073	14,221	2	1	4	7/1	1-4	50.00
Cleveland Clinic Foundation Hospital [1,4]	Cleveland	E. W. Netherton	142	14,267	5	1	3	7/1	1-3	100.00
University Hospitals ★[3,4]	Cleveland	H. N. Cole	324	14,265	8	2	3	7/1	1+	25.00
University of Oregon Medical School Hospitals and Clinics ★[2,4]	Portland, Ore.	L. B. Kingery	32	3,589	....	..	1	7/1	2	75.00
Graduate Hosp. of the Univ. of Penna. ★[3]	Philadelphia	D. M. Pillsbury	632	10,279	....	..	1	7/1	1-2	.....
Hospital of the Univ. of Pennsylvania ★[3,4]	Philadelphia	D. M. Pillsbury	706	21,513	....	..	12	7/1	1-3	.....
Jefferson Medical College Hospital ★[2]	Philadelphia	F. C. Knowles	12	4,417	....	..	1	....	1	.....
Skin and Cancer Hospital [2,4]	Philadelphia	C. Wright and D. M. Pillsbury	164	45,909	1	..	2	1/1, 7/1	1-2	30.00
University of Pittsburgh Med. Center ★[3,4]	Pittsburgh	W. H. Guy	1,326[b]	5,305[b]	....	..	1	....	1-5	33.00
†Parkland Hospital ★[1]	Dallas, Texas	B. Shelmire	.....	63,424	....	..	6	Varies	2+	80.00
John Sealy Hospital ★[3,4]	Galveston, Texas	C. N. Frazier	172	16,850	3	3	6	....	1-3	50.00
University of Virginia Hospital ★[3,4]	Charlottesville, Va.	D. C. Smith	308	12,284	4	2	6	7/1	3-4	31.00
†State of Wisconsin General Hospital ★[1]	Madison, Wis.	S. A. M. Johnson	188	4,379	1	1	3	9/1	1-3	25.00

Hospitals, 66; Assistant Residencies and Residencies, 180

6. GASTROENTEROLOGY

Approval of residencies in Gastroenterology has been authorized by the American Medical Association. Hospitals desiring residency approval in this field should make application to the Council on Medical Education and Hospitals, 535 N. Dearborn Street, Chicago 10, Illinois.

7. GENERAL RESIDENCY

A general residency (also called a "mixed residency") is a general hospital assignment of one or more years after the internship. It usually does not carry credit toward certification by the American Boards in the specialties, but is designed rather to provide additional general training. All approved internship hospitals are also approved for general residencies.

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Baptist Hospitals [4]	Birmingham, Ala.	S. D. Motley	7,902	157	38	5	7/1	1	$150.00
St. Vincent's Hospital	Birmingham, Ala.	J. L. Carmichael	5,032	82	24	3	4/1, 7/1	1	200.00
St. Margaret's Hospital	Montgomery, Ala.	J. H. Blue	7,162	258	36	3	7/1	1	.....
St. Mary's Hospital and Sanatorium [16]	Tucson, Ariz.	W. R. Hewitt	5,053	208	42	2	7/1	1	.....
Leo N. Levi Memorial Hospital	Hot Springs, Ark.	D. C. Lee	1,204	49	24	1	6/1	1-2	250.00
Kern General Hospital [4]	Bakersfield, Calif.	R. A. Patrick	10,315	509	209	28	....	1	.....
Paradise Valley Sanitarium and Hospital	National City, Calif.	H. A. Hall	3,649	116	19	3	....	1	.....
Monterey County Hospital [4]	Salinas, Calif.	J. C. Sharp	2,265	102	44	4	....	1	.....
St. Helena Sanitarium and Hospital	Sanitarium, Calif.	G. K. Abbott	4,186	72	18	2	....	1	.....
Community Hosp. of San Mateo County [4]	San Mateo, Calif.	W. H. Murphy	2,253	190	57	7	7/1	1	200.00
Sonoma County Hospital [4]	Santa Rosa, Calif.	R. L. Zieber	3,614	271	93	7	1/1, 6/1	1	250.00
Boulder-Colorado Sanitarium and Hospital	Boulder, Colo.	R. T. Smith	2,209	55	10	1	....	1	.....
Memorial Hospital [4]	Colorado Spgs., Colo.	C. E. Richmond	3,115	106	9	2	7/1	1	185.00
St. Francis Hospital and Sanatorium [4]	Colorado Spgs., Colo.	J. J. Mahoney	2,657	168	27	2	2/1	1	150.00

Numerical and other references will be found on page 1375.

7. GENERAL RESIDENCY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated •	Deaths	Autopsies	Asst. Res. and Residencies •	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
St. Mary Hospital	Pueblo, Colo.	C. L. Hooper	3,062	109	12	2	....	1	.....
Bristol Hospital	Bristol, Conn.	R. A. Richardson	4,625	175	21	2	....	1	.....
Greenwich Hospital [4]	Greenwich, Conn.	J. A. Miller	3,258	93	50	4	7/1	1	150.00
Eastern Dispensary and Casualty Hospital	Washington, D. C.	J. R. Young	3,537	190	52	3	....	1	.....
Riverside Hospital [4]	Jacksonville, Fla.	T. Z. Cason	1,693	26	11	1	....	1	.....
Alton Memorial Hospital	Alton, Ill.	C. W. Emons	4,725	129	45	3	....	1	.....
St. Joseph's Hospital	Alton, Ill.	W. McGinnis	6,127	291	52	5	4/1	1	150.00
MacNeal Memorial Hospital [4]	Berwyn, Ill.	H. P. Gunnar	6,999	236	77	5	1/1, 7/1	1	.....
St. Francis Hospital	Blue Island, Ill.	F. Lally	4,269	124	22	2	....	1	225.00
St. James Hospital	Chicago Heights, Ill.	P. Parisi	4,890	153	39	3	7/1	1	150.00
St. Anthony's Hospital	Rock Island, Ill.	R. B. Collins	4,691	229	38	2	Varies	1	.....
Victory Memorial Hospital	Waukegan, Ill.	G. B. Callahan	4,107	143	73	1	....	1	.....
Clinic Hospital [4]	Bluffton, Ind.	T. E. Caylor	1,611	61	34	3	1/1, 7/1	1-3	100.00
Lafayette Home Hospital [4]	Lafayette, Ind.	J. W. Strayer	4,173	120	7	2	....	1	250.00
St. Luke's Methodist Hospital	Cedar Rapids, Iowa	C. B. Meffert	6,873	250	38	2	4/1, 7/1	1	175.00
Jewish Hospital	Louisville, Ky.	H. C. T. Richmond	3,298	102	35	2	....	1	.....
E. A. Conway Memorial Hospital [4]	Monroe, La.	F. C. Bennett	6,075	218	55	6	Varies	1	.....
Long Island Hospital	Boston	R. I. Smith	790	115	9	11	....	1	208.33
St. Anne's Hospital	Fall River, Mass.	E. E. Hussey	3,261	68	31	3	4/1	1	150.00
Framingham Union Hospital [4]	Framingham, Mass.	H. Folsom	3,159	108	27	2	4/1	1	75.00
Malden Hospital	Malden, Mass.	....	5,666	196	87	3	....	1	.....
Cooley Dickinson Hospital [4]	Northampton, Mass.	L. N. Durgin	4,730	217	22	4	4/1	1	25.00
Tewksbury State Hospital and Infirmary [4]	Tewksbury, Mass.	C. W. Houghton	1,032	341	33	4	....	1	.....
Parkside Hospital	Detroit	R. G. Robinson	1,474	65	4	2	7/1	1	.....
Saratoga General Hospital	Detroit	E. J. Hammer	4,645	71	20	2	6/1	1	200.00
Cottage Hospital [4]	Grosse Pointe, Mich.	J. W. MacKenzie	2,412	51	19	1	7/1	1	250.00
Mercy Hospital	Muskegon, Mich.	E. S. Thornton	4,226	91	15	2	....	1	.....
St. Joseph Mercy Hospital [4]	Pontiac, Mich.	R. E. Olsen	9,907	226	79	6	....	1	.....
Wyandotte General Hospital [4]	Wyandotte, Mich.	A. H. Cameron	6,315	161	74	6	Varies	1	.....
Hibbing General Hospital	Hibbing, Minn.	C. S. Randquist	4,722	106	96	2	....	1	.....
Eitel Hospital [4]	Minneapolis	W. R. Jones	4,137	125	38	2	1/1	1	100.00
Fairview Hospital [4]	Minneapolis	J. C. Glere	9,818	200	60	3	4/1, 7/1	1	200.00
Lutheran Deaconess Home and Hospital	Minneapolis	I. Sivertsen	6,160	162	35	1	6/1	1	175.00
Midway Hospital	St. Paul	G. Earl	5,763	126	42	2	7/1	1	.....
Northern Pacific Beneficial Assn. Hospital	St. Paul	B. I. Derauf	3,531	91	22	2	1/1	1-2	300.00
Alexian Brothers Hospital	St. Louis	N. A. Schneider	2,624	149	57	2	7/1, 12/1	1	200.00
Missouri Pacific Hospital	St. Louis	....	6,657	164	15	4	....	1	.....
Douglas County Hospital	Omaha	T. D. Boler	1,919	229	21	3	....	1	.....
Elliot Hospital [4]	Manchester, N. H.	G. F. Dwinell	3,440	75	51	3	4/1	1	75.00
Sacred Heart Hospital	Manchester, N. H.	G. L. Bastian	3,035	169	25	2	7/1	1	.....
Auburn City Hospital [4]	Auburn, N. Y.	R. F. Johnson	6,872	253	60	4	7/1	1	150.00
Jewish Sanitarium and Hospital for Chronic Diseases [4]	Brooklyn	....	146	115	21	6	1/1, 7/1	1+	150.00
St. Joseph Hospital	Far Rockaway, N. Y.	A. B. Johnson	2,629	99	19	5	....	1	.....
Cornell University Infirmary	Ithaca, N. Y.	N. S. Moore	2,535	2	..	4	....	1	.....
Kingston Hospital [4]	Kingston, N. Y.	D. S. Meyers	2,999	172	33	2	10/1	1	100.00
Beekman-Downtown Hospital	New York City	R. H. Kennedy	1,933	126	29	2	4/1	1	125.00
Richmond Memorial Hospital [4]	Staten Island, N. Y.	D. Shepard	1,987	87	13	4	....	1	.....
Wyoming County Community Hospital	Warsaw, N. Y.	H. S. Martin	2,778	119	22	3	4/1, 7/1	1	75.00
Mercy Hospital	Charlotte, N. C.	O. D. Baxter	7,024	180	30	1	....	1	.....
Highsmith Hospital [4]	Fayetteville, N. C.	J. F. Highsmith Jr.	5,013	94	1	4	7/1	1	100.00
Park View Hospital	Rocky Mount, N. C.	E. S. Boice	3,601	135	5	1	Varies	1	100.00
St. John's Hospital	Fargo, N. D.	H. J. Fortin	5,191	175	35	3	....	1	.....
Glenville Hospital [4]	Cleveland	J. P. Anderson	4,546	130	42	2	7/1	1	175.00
Grace Hospital	Cleveland	A. E. Biddinger	2,305	29	13	2	....	1	200.00
Woman's Hospital [4]	Cleveland	N. L. Zinner	4,108	88	29	5	7/1	1	125.00
Fort Hamilton Hospital [4]	Hamilton, Ohio	C. Keller	2,844	84	39	2	7/1	1	.....
Mansfield General Hospital	Mansfield, Ohio	L. D. Bonar	5,788	199	23	2	6/1	1	.....
Doctors Hospital [4]	Philadelphia	A. P. Keegan	3,808	100	33	4	6/1	1	125,00
Madison Rural Sanitarium and Hospital [4]	Madison Coll., Tenn.	O. Jones	2,531	79	14	2	7/1	1	125.00
Medical Arts Hospital	Dallas, Texas	R. E. Van Duzen	5,260	91	16	2	....	1	.....
All Saints Hospital [4]	Fort Worth, Texas	J. H. Grammer	4,725	138	27	3	4/1	1	150.00
St. Mary's Infirmary	Galveston, Texas	B. R. Parrish	4,776	133	28	2	....	1	.....
Elizabeth Buxton Hospital	Newport News, Va.	P. Hogg	6,554	157	69	2	....	1	200.00
Riverside Hospital	Newport News, Va.	S. H. Mirmelstein	4,980	152	39	3	....	1	.....
Maryview Hospital	Portsmouth, Va.	V. J. Meads	3,089	97	28	2	....	1	.....
Grace Hospital	Richmond, Va.	A. L. Herring	4,382	105	14	2	Varies	1	.....
Retreat for the Sick [4]	Richmond, Va.	W. R. Jordan	4,272	75	37	3	7/1	1	100.00
St. Elizabeth's Hospital	Richmond, Va.	G. W. Horsley	1,774	34	25	2	7/1	1-2	100.00
St. Luke's Hospital	Richmond, Va.	L. Tabb	2,787	84	30	1	....	1	.....
Sheltering Arms Hospital [4]	Richmond, Va.	W. Bickers	1,126	47	18	1	5/1	1	100.00
Maynard Hospital	Seattle	J. Duncan	3,687	124	86	2	4/1	1	200.00
St. Joseph Hospital	Vancouver, Wash.	J. C. Brougher	4,934	99	21	2	....	1	.....
McMillan Hospital	Charleston, W. Va.	W. O. McMillan	4,140	43	11	2	4/1	1	200.00
St. Francis Hospital [4]	Charleston, W. Va.	C. B. Smith	5,021	115	17	4	....	1	150.00
St. Mary's Hospital	Clarksburg, W. Va.	H. V. Thomas	5,662	87	39	3	1/1	1	150.00
Fairmont General Hospital	Fairmont, W. Va.	G. H. Traugh	5,113	88	26	4	....	1	.....
Camden-Clark Memorial Hospital [4]	Parkersburg, W. Va.	C. L. Goodhand	4,798	194	67	4	4/1, 7/1	1-2	100.00
Mercy Hospital	Janesville, Wis.	W. H. McGuire	3,598	149	28	2	....	1	.....
La Crosse Lutheran Hospital [4]	La Crosse, Wis.	J. Harmon	4,524	137	58	1	....	1	.....
St. Mary's Hospital [4]	Superior, Wis.	G. J. Hathaway	3,410	219	31	1	Varies	1	.....

Hospitals, 94; Assistant Residencies and Residencies, 296

8. INTERNAL MEDICINE

The following services are approved by the Council and the American Board of Internal Medicine

United States Army.—Residencies available to medical officers, U. S. Army.

†Letterman General Hospital ★	San Francisco
Fitzsimons General Hospital ★	Denver
†Walter Reed General Hospital ★	Washington, D. C.
†Oliver General Hospital ★	Augusta, Ga.
†Wm. Beaumont General Hospital ★	El Paso, Texas
†Brooke General Hospital ★	San Antonio, Texas
†Madigan General Hospital ★	Fort Lewis, Wash.

United States Navy.—Residencies available to medical officers, U. S. Navy.

†U. S. Naval Hospital ★	Long Beach, Calif.
†U. S. Naval Hospital ★	Oakland, Calif.
†U. S. Naval Hospital ★	San Diego, Calif.
U. S. Naval Hospital ★	Bethesda, Md.
U. S. Naval Hospital ★	Philadelphia

Numerical and other references will be found on page 1375.

8. INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated[6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies[8]	Beginning of Service (1947)	Length of Service (Years)	Beginning (Month) Stipend
Jefferson and Hillman Hospitals ★[4]	Birmingham, Ala.	J. S. McLester	3,733	12,012	411	128	6	7/1	1	$ 30.00
Norwood Hospital ★[4]	Birmingham, Ala.	E. D. Linebury	1,072	4,455	68	42	2	....	3	100.00
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company ★	Fairfield, Ala.	W. W. Compton	1,601	21,917	138	47	3	7/1	1-3	200.00
†St. Joseph's Hospital ★	Phoenix, Ariz.	R. S. Flinn	2,135	.....	129	47	1	7/1	1-2	150.00
Baptist State Hospital ★	Little Rock, Ark.	S. T. W. Cull	2,451	.....	148	29	2	....	1	.....
†San Joaquin General Hospital ★	French Camp, Calif.	G. K. Wever	4,615	8,530	411	211	2	7/1	1-3	200.00
General Hospital of Fresno County ★[4]	Fresno, Calif.	W. E. R. Schottstaedt	1,577	5,739	269	58	1	7/1	1-2	205.00
†Seaside Memorial Hospital ★	Long Beach, Calif.	J. E. Walker	3,401	.....	218	20	3	1/1, 7/1	1-3	150.00
†California Hospital ★[4]	Los Angeles	H. D. Van Fleet	1,989	10,511	210	112	3	7/1	2	100.00
Cedars of Lebanon Hospital ★[4]	Los Angeles	M. Nathanson	2,803	27,044	271	110	2	7/1	1	100.00
†Hospital of the Good Samaritan ★[4]	Los Angeles	L. S. Chapman	2,601	6,768	215	75	3	7/1	1-3	200.00
Los Angeles County Hospital ★[4]	Los Angeles	D. W. Griggs	18,100	52,717	2,636	835	18	Varies	3	157.20
†St. Vincent's Hospital ★	Los Angeles	J. C. Ruddock	926	.....	47	28	1	7/1	1	.....
White Memorial Hospital ★	Los Angeles	D. D. Comstock	1,508	20,390	.....	..	5	....	1-3	135.00
Highland-Alameda County Hospital ★[4]	Oakland, Calif.	H. G. MacLean	2,170	.....	471	177	4	7/1	1-3	155.00
†Permanente Foundation Hospital ★[4]	Oakland, Calif.	M. F. Collen	2,317	32,754	96	72	4	7/1	1-3	125.00
†Samuel Merritt Hospital	Oakland, Calif.	F. Taylor	859	.....	74	30	1	1/1	1	110.00
†Veterans Administration Hospital	Oakland, Calif.	M. L. Stephenson	952	.....	46	33	0	1/1, 7/1	1-3	345.75
Collis P. and Howard Huntington Memorial Hospital ★	Pasadena, Calif.	M. B. Corlette	2,531	.....	267	..	2	7/1	1	85.00
San Diego County General Hospital ★	San Diego, Calif.	C. L. Stealy	4,678	8,794	465	124	2	7/1	1	187.00
Children's Hospital ★[4]	San Francisco	D. Atkinson	226	1,786	17	9	1	7/1	1-2	50.00
Franklin Hospital ★[4]	San Francisco	H. C. Shepardson	1,257	.....	87	27	2	7/1	1	100.00
†French Hospital ★[4]	San Francisco	D. L. Wilbur	3,059	.....	.....	..	2	7/1	1	150.00
Mount Zion Hospital ★[4]	San Francisco	A. L. Cohn and J. J. Sampson	987	3,917	151	87	3	7/1	1	75.00
St. Luke's Hospital ★[4]	San Francisco	E. L. Bruck	2,165[b]	1,162[b]	.....	..	2	7/1	1	90.00
†St. Mary's Hospital ★	San Francisco	J. J. McGinnis	1,309	.....	122	25	3	7/15	1	100.00
San Francisco Hospital ★[4]	San Francisco	L. H. Briggs	3,419	.....	920	169	7	....	1	175.00
†Southern Pacific General Hospital ★	San Francisco	R. E. Allen	1,721	21,780	45	26	2	7/1	1-3	125.00
Stanford University Hospitals ★[4]	San Francisco	A. L. Bloomfield	1,937	19,644	142	52	15	7/1	1	50.00
U. S. Marine Hospital ★	San Francisco	R. K. Maddock	1,620	26,108	113	70	2	....	2-4	176.66
University of California Hospital ★[4]	San Francisco	W. J. Kerr	1,747	26,031	92	55	20	7/1	1	50.00
†Veterans Administration Hospital [4]	San Francisco	G. E. Hein	.....	.....	.....	..	18	7/1	1-3	275.00
Santa Clara County Hospital ★	San Jose, Calif.	P. Morton	.....	.....	.....	..	2	....	1	.....
Fairmont Hospital of Alameda County [4]	San Leandro, Calif.	E. G. MacLean	1,547	6,284	352	136	4	7/1	1-3	105.00
†Santa Barbara Cottage Hospital ★[4]	Santa Barbara, Calif.	A. E. Koehler	2,199	.....	79	34	2	7/1	1	100.00
†Veterans Administration Hospital	Van Nuys, Calif.	G. M. Leiby	814	23,961	18	17	41	1/1, 7/1	1-5	275.00
†Veterans Administration Hospital	W. Los Angeles, Calif.	R. O. Egeberg	1,726	179,374	274	110	43	7/1	1-3	275.00
Colorado General Hospital ★[4]	Denver	J. J. Waring	913	8,836	156	124	6	1/1	1-3	85.00
Denver General Hospital ★	Denver	M. Katzman	2,160	1,795	630	137	2	7/1	1	50.00
†Corwin Hospital ★	Pueblo, Colo.	R. H. Finney	1,779	46,384	110	55	1	7/1	1	75.00
†Hartford Hospital ★[4]	Hartford, Conn.	J. W. Hutchison	3,139	3,122	304	120	5	7/1	1-3	50.00
Grace-New Haven Community Hospital										
Grace Unit ★	New Haven, Conn.	S. J. Goldberg	1,205	.....	150	..	3	7/1	3	40.00
New Haven Unit ★[4]	New Haven, Conn.	F. G. Blake	2,524	21,859	.....	..	7	7/1	1	40.00
†Hospital of St. Raphael ★	New Haven, Conn.	T. Evans and L. Nahum	1,263	500	183	43	2	7/1	1	75.00
†Veterans Administration Hospital	Newington, Conn.	P. Kunkel	1,203	.....	48	20	12	7/1	1-3	275.00
†Lawrence and Memorial Associated Hospitals ★	New London, Conn.	A. Labensky	890	.....	19	12	1	Varies	1	.....
†Delaware Hospital ★	Wilmington, Del.	L. D. Flinn	1,471	2,080	64	43	3	3/1	1	125.00
Memorial Hospital ★	Wilmington, Del.	L. D. Flinn	1,007	396	92	34	1	....	1	.....
Central Dispensary and Emergency Hospital ★[4]	Washington, D. C.	J. Minor	1,690	2,159	161	66	2	7/1	1	50.00
Freedmen's Hospital ★[4]	Washington, D. C.	J. B. Johnson	886	7,532	183	56	9	7/1	1-3	75.00
Gallinger Municipal Hospital ★[4]	Washington, D. C.	H. Jeghers	2,637	514	511	226	14	7/1	1-3	75.00
Garfield Memorial Hospital ★[4]	Washington, D. C.	B. F. Weems	1,626	1,867	.....	..	3	....	1	150.00
Georgetown University Hospital ★	Washington, D. C.	H. Jeghers	1,423	5,347	63	28	4	7/1	1-2	25.00
George Washington University Hospital ★	Washington, D. C.	P. F. Dickens	588	2,897	30	16	4	....	1	.....
†Providence Hospital ★[4]	Washington, D. C.	H. R. Schreiber	2,150	.....	125	46	3	7/1	3	75.00
†Veterans Administration Hospital	Washington, D. C.	T. McP. Brown	471	12,253	98	51	6	1/1	1-3	275.00
Duval County Hospital ★	Jacksonville, Fla.	L. Limbaugh	680	.....	124	60	3	....	1	.....
†Riverside Hospital [4]	Jacksonville, Fla.	T. Z. Cason	804	7,395	43	6	1	10/1	1	150.00
James M. Jackson Memorial Hospital ★	Miami, Fla.	....	4,078	6,787	505	163	3	7/1	1	95.50
Grady Memorial Hospital ★[4]	Atlanta, Ga.	P. B. Beeson	2,175	48,692	420	199	11	7/1	1	20.00
†Piedmont Hospital ★	Atlanta, Ga.	J. E. Paullin	912	.....	21	13	1	7/1	1-2	75.00
St. Joseph Infirmary ★	Atlanta, Ga.	J. H. Hines	1,070	1,020	69	20	2	1/1	1-3	115.00
University Hospital ★[4]	Augusta, Ga.	V. P. Sydenstricker	2,067	3,662	244	64	6	7/1	1-3	40.00
†Veterans Administration Hospital	Chamblee, Ga.	....	.....	.....	.....	..	12	7/1	1-3	275.00
Emory University Hospital ★	Emory University, Ga.	R. H. Wood	13,369	18,078	3,923	569	16	Varies	1-3	27.50
†Alexian Brothers Hospital ★	Chicago	I. F. Volini	1,563	.....	180	75	4	7/1	1-3	100.00
†American Hospital ★[4]	Chicago	O. Porges	997	10,237	135	..	1	7/1	1-2	50.00
†Augustana Hospital ★	Chicago	C. A. Hedberg	1,973	.....	135	42	1	7/1	1	50.00
Cook County Hospital ★[4]	Chicago	C. Maher	13,360	18,078	3,923	569	10	Varies	1-3	27.50
†Henrotin Hospital ★[4]	Chicago	F. K. Hick	631	299	43	19	1	7/1	1	100.00
Illinois Masonic Hospital ★[4]	Chicago	R. Hayes	1,200	.....	255	66	3	....	1	.....
Mercy Hospital-Loyola University Clinics ★	Chicago	G. O'Brien	1,875	5,018	139	32	2	7/1	1-2	25.00
Michael Reese Hospital ★[4]	Chicago	M. W. Lev	4,823	16,012	.....	..	10	....	1-3	25.00
Mount Sinai Hospital ★[4]	Chicago	....	1,895	12,520	168	50	3	7/1	1	50.00
Norwegian-American Hospital ★[4]	Chicago	A. E. Lehner	1,187	.....	127	33	1	11/1	1	25.00
Passavant Memorial Hospital ★[4]	Chicago	W. H. Nadler	1,146	1,721	58	30	4	....	1	None
Presbyterian Hospital ★	Chicago	R. C. Brown	3,537	15,901	149	87	8	1/1	1-3	25.00
Provident Hospital ★[4]	Chicago	A. F. Connor	680	6,367	105	17	1	....	1	.....
Research and Educational Hospitals ★[4]	Chicago	R. W. Keeton	554	9,304	55	..	4	7/1	1-3	55.00
St. Joseph's Hospital ★[4]	Chicago	L. E. Hines	2,015	.....	127	44	2	....	1	.....
St. Luke's Hospital ★[4]	Chicago	R. W. Keeton	3,328	7,559	221	116	11	7/1	1-3	25.00
University of Chicago Clinics ★[4]	Chicago	L. L. Coggeshall	1,831	41,594	107	80	8	7/1	1-3	25.00
Wesley Memorial Hospital ★[4]	Chicago	P. S. Rhoads	2,449	.....	124	70	6	1/1, 7/1	1-3	25.00
†Woodlawn Hospital ★[4]	Chicago	W. E. Gouwens	1,257	.....	65	20	1	7/1	1	.....
Evanston Hospital ★	Evanston, Ill.	L. D. Snorf	2,446	10,434	154	133	3	....	3	50.00
St. Francis Hospital ★	Evanston, Ill.	R. M. Jones	2,278	.....	225	64	2	Varies	1	75.00
†Veterans Administration Hospital	Hines, Ill.	L. A. Baker	6,538	.....	311	170	43	Varies	1-3	275.00
St. Francis Hospital ★[4]	Peoria, Ill.	G. M. Parker	2,452	15,052	227	61	2	6/1, 11/1	1-2	150.00
Indi[illegible] ★[4]	Indianapolis	C. J. Clark	2,287	23,372	429	188	9	....	1-3	.....
[illegible] Center ★[4]	Indianapolis	J. O. Ritchey	2,078	12,343	201	111	7	....	1	33.33
[illegible]	Indianapolis	R. Moser	3,255	.....	240	74	3	7/1	1-2	200.00
[illegible]	Des Moines, Iowa	J. T. Strawn	779	719	170	115	3	Varies	1-3	125.00
[illegible]	Iowa City	W. M. Fowler	2,863	3,743	160	87	8	7/1	1	40.00
University of Kansas Hospitals ★[4]	Kansas City, Kan.	R. H. Major	1,750	13,821	138	81	5	....	1-3	.....

Numerical and other references will be found on page 1375.

8. INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†St. Francis Hospital ★	Wichita, Kan.	F. J. McEwen	5,076	.....	168	66	4	7/1	1	160.00
Wesley Hospital ★[4]	Wichita, Kan.	G. F. Corrigan	3,107	.....	169	44	1	9/1	1-3	150.00
Louisville General Hospital ★	Louisville, Ky.	J. W. Moore	1,877	24,535	254	105	12	4/1	1-4	45.00
†St. Joseph Infirmary ★	Louisville, Ky.	O. O. Miller	4,815	1,986	150	58	3	7/1	1-3	75.00
†Veterans Administration Hospital	Louisville, Ky.	J. R. Gott Jr.	.....	.....	....	..	20	7/1	1-3	275.00
Charity Hospital of Louisiana ★	New Orleans		6,087	35,207	476	263	25	7/1	1-3	25.00
Touro Infirmary ★	New Orleans	S. B. Nadler	3,957	6,723	174	79	4	7/1	1	17.50
†Shreveport Charity Hospital ★[4]	Shreveport, La.	M. D. Hargrove	1,012	8,761	213	125	5	7/1	1-3	60.00
†Maine General Hospital ★	Portland, Me.	E. H. Drake	1,110	490	151	46	2	....	1+	50.00
Baltimore City Hospitals ★[4]	Baltimore	C. H. Boyd	1,919	.....	403	203	7	7/1	1	35.00
Church Home and Hospital ★[4]	Baltimore	Z. R. Morgan	572	629	45	16	1	7/1	1	50.00
Franklin Square Hospital ★[4]	Baltimore	W. H. Smith	436	894	60	13	2	....	1	.....
Hospital for Women ★[4]	Baltimore	W. Fort	530	4,024	36	15	2	7/1	1	85.00
Johns Hopkins Hospital ★[4]	Baltimore	A. M. Harvey	3,461	53,035	229	141	12	7/1	1-8	.....
Maryland General Hospital ★[4]	Baltimore	J. E. Legge	726	261	141	14	2	7/1	1-3	75.00
Mercy Hospital ★	Baltimore	H. R. Peters	1,036	.....	106	22	4	7/1	1	50.00
Provident Hospital and Free Dispensary ★[4]	Baltimore	E. B. Jarrett	894	.....	....	..	2	....	1	.....
St. Agnes' Hospital ★	Baltimore	L. P. Gundry	949	188	90	24	2	....	1	.....
St. Joseph's Hospital ★	Baltimore	F. J. Geraghty	1,007	1,072	118	38	3	7/1	2-3	50.00
Sinai Hospital ★[4]	Baltimore	M. Sherry	1,440	5,232	167	67	5	7/1	1	25.00
South Baltimore General Hospital ★[4]	Baltimore	G. McLean	523	1,887	56	19	2	....	1	.....
Union Memorial Hospital ★	Baltimore	W. A. Baetjer	1,655[b]	2,916[b]	....	..	6	7/1	1	.....
U. S. Marine Hospital ★	Baltimore	L. L. Terry	2,479	4,449	56	31	5	7/1	1-2	184.16
University Hospital ★[4]	Baltimore	M. C. Pincoffs	1,781	4,514	180	109	5	7/1	1-2	75.00
West Baltimore General Hospital ★[4]	Baltimore	L. A. M. Krause	879	949	108	..	2	....	1	.....
†Veterans Administration Hospital [4]	Fort Howard, Md.	P. Padgett	3,351	.....	173	34	12	Varies	3	275.00
†Beverly Hospital ★	Beverly, Mass.	A. E. Parkhurst	1,589	3,154	99	39	1	....	1-2	100.00
Beth Israel Hospital ★	Boston	H. L. Blumgart	1,748	11,015	160	88	4	4/1	1	41.66
Boston City Hospital ★[4]	Boston	W. R. Ohler	11,947	33,915	2,288	365	21	....	1-2	50.00
†Carney Hospital ★[4]	Boston	N. A. Welch	555	1,757	93	31	1	7/1	1	50.00
Joseph H. Pratt Diagnostic Hospital [4]	Boston	S. Proger	3,497	2,983	....	..	6	....	1	83.33
Lahey Clinic [4]	Boston	L. M. Hurxthal	2,500[b]	50,000[b]	....	..	20	....	1-2	.....
Massachusetts General Hospital ★[4]	Boston	J. H. Means	3,211	21,423	155	113	47	7/1	1-3	41.66
Massachusetts Memorial Hospital ★	Boston	C. S. Keefer	1,294	4,566	67	45	12	Varies	1	50.00
†New England Deaconess Hospital [4]	Boston	H. F. Root	1,895[b]	.....	....	..	4	....	1-2	.....
Peter Bent Brigham Hospital ★[4]	Boston	G. W. Thorn	2,015	26,300	195	143	7	Varies	1	.....
†Veterans Admin. Hospital, W. Roxbury	Boston	T. A. Warthin	401	49	16	7	10	7/1	1-3	275.00
†Mount Auburn Hospital ★[4]	Cambridge, Mass.	J. H. Townsend	1,034	3,105	145	50	1	7/1	1	75.00
†Veterans Administration Hospital	Framingham, Mass.	M. B. Strauss	.....	.....	.....	..	14	Varies	1-3	275.00
†Malden Hospital	Malden, Mass.	E. G. Thorp	1,728	.....	166	36	1	7/1	1-3	50.00
†Cooley Dickinson Hospital	Northampton, Mass.	J. E. Hayes	1,169	1,357	158	3	2	7/1, 10/1	1	.....
†Salem Hospital ★	Salem, Mass.	S. N. Gardner	1,341	244	170	..	1	7/1	1	50.00
†Memorial Hospital ★[4]	Worcester, Mass.	O. H. Stansfield	1,273	852	91	18	1	....	1-2	100.00
†St. Vincent Hospital ★	Worcester, Mass.	J. J. Dumphy	2,003	.....	176	29	2	7/1	1-2	75.00
Worcester City Hospital ★	Worcester, Mass.	G. W. Haigh	1,898	3,953	324	97	2	....	1	50.00
†St. Joseph's Mercy Hospital ★[4]	Ann Arbor, Mich.	H. H. Riecker	1,196	29,978	109	31	2	7/1	1-3	125.00
University Hospital ★[4]	Ann Arbor, Mich.	C. C. Sturgis	2,633	15,630	223	112	16	7/1	1	101.40
†Veterans Administration Hospital	Dearborn, Mich.	H. J. Kullman	2,352	200	224	47	11	7/1	2-3	275.00
Alexander Blain Hospital	Detroit	H. L. Woodburne and L. E. Herviver	525	13,022	28	13	2	....	1	.....
City of Detroit Receiving Hospital ★[4]	Detroit	G. B. Myers	3,644	21,766	748	283	19	7/15	1+	149.66
Grace Hospital ★[4]	Detroit	L. T. Colvin	2,924	7,299	241	54	6	7/1	1-3	75.00
Harper Hospital ★[4]	Detroit	R. C. Moehlig	2,605[b]	.....	....	..	11	....	1	113.00
Henry Ford Hospital ★[4]	Detroit	F. J. Sladen	5,621	109,860	227	88	50	7/1	1-5	200.00
Mount Carmel Mercy Hospital ★	Detroit	H. L. Smith	2,332	.....	270	69	2	7/1	1-4	100.00
Providence Hospital ★	Detroit	R. Weyher	2,073	.....	270	152	1	....	1	.....
St. Mary's Hospital ★	Detroit	W. J. Wilson Sr.	1,834	3,751	191	18	3	....	3	140.00
Woman's Hospital ★[4]	Detroit	B. I. Johnstone	.....	.....	....	..	1	7/1	1-4	100.00
Wayne County General Hospital and Infirmary ★[4]	Eloise, Mich.	M. R. McQuiggan	10,072	30,739	777	226	11	7/1	1	197.50
Hurley Hospital ★	Flint, Mich.	M. S. Chambers	2,744	.....	337	84	2	7/1	1	.....
Blodgett Memorial Hospital ★[4]	Grand Rapids, Mich.	C. Beeman	897	.....	67	32	3	10/1	1-3	175.00
Butterworth Hospital ★[4]	Grand Rapids, Mich.	C. V. Crane	1,921	.....	204	70	2	7/1	1-3	100.00
†Saginaw General Hospital ★	Saginaw, Mich.	S. Yntema	1,820	.....	140	41	1	7/1	1-3	75.00
St. Mary's Hospital ★	Duluth, Minn.	R. Bardon	1,579	.....	123	81	1	7/1	1	75.00
Minneapolis General Hospital ★[4]	Minneapolis	G. Fahr	2,477	7,719	307	168	8	1/1, 7/1	1-3	100.00
†Northwestern Hospital ★[4]	Minneapolis	A. E. Cardle	2,006	.....	127	51	1	7/1	1	150.00
University Hospitals ★[4]	Minneapolis	C. J. Watson	1,116	22,637	132	96	14	7/1	1-3	100.00
Veterans Administration Hospital	Minneapolis	R. V. Ebert	2,621	2,536	127	65	28	2/1, 7/1	1	275.00
Mayo Foundation	Rochester, Minn.	R. M. Wilder	(See page 1375)				120	....	1	.....
Ancker Hospital ★	St. Paul	A. Hoff	1,608	10,704	265	175	6	4/1	1	91.50
Charles T. Miller Hospital ★	St. Paul	E. T. F. Richards and C. N. Hensel	2,094	8,378	....	..	3	1/1	1-3	100.00
St. Louis County Hospital ★	Clayton, Mo.	R. O. Muether	951	10,925	191	70	4	7/1	1-3	60.00
Kansas City General Hospital No. 1 ★	Kansas City, Mo.	D. A. Williams	2,554	17,534	441	247	5	7/1	2-3	50.00
†Menorah Hospital ★[4]	Kansas City, Mo.	A. Sophian	1,448	.....	177	51	1	7/1	1	200.00
Research Hospital ★[4]	Kansas City, Mo.	R. C. Davis	1,828	.....	110	59	2	9/1	3	.....
St. Joseph Hospital ★	Kansas City, Mo.	W. M. Ketcham	.....	.....	....	..	1	....	1-3	75.00
St. Mary's Hospital ★[4]	Kansas City, Mo.	H. M. Parker	1,289	.....	110	72	1	7/1	1	.....
Barnes Hospital ★[1]	St. Louis	W. B. Wood	4,156	19,241	211	152	20	7/1	1-3	25.00
De Paul Hospital ★	St. Louis	E. P. Buddy	1,404	548	184	45	2	7/1	1-2	.....
Homer G. Phillips Hospital ★[4]	St. Louis	H. Bulger	2,407	7,645	518	91	5	7/1	1	50.00
Jewish Hospital ★[4]	St. Louis	L. Sale	3,103	.....	204	61	4	....	1+	50.00
Missouri Baptist Hospital ★	St. Louis	S. B. Grant	2,003	.....	....	..	4	7/1	1-3	70.00
St. Anthony's Hospital ★	St. Louis	R. V. Powell	1,353	.....	92	..	1	3/1	1	50.00
St. John's Hospital ★	St. Louis	C. H. Neilson	1,942	3,861	176	52	3	7/1	1-2	50.00
St. Louis City Hospital ★[4]	St. Louis		4,490	6,537	884	348	13	7/1	1	86.00
St. Luke's Hospital ★	St. Louis	D. M. Skilling	955	.....	....	..	1	7/1	1	75.00
St. Mary's Group of Hospitals ★	St. Louis	R. A. Kinsella	2,830	35,269	197	81	8	Varies	3	35.00
Joseph's Hosp. ★[4]	Omaha	A. Sachs	4,622	7,895	255	88	1	7/1	1-2	100.00
pital ★[4]	Omaha	R. W. Bliss	1,072	1,439	66	29	1	7/1	1+	75.00
Hospital ★	Omaha		229	1,901	16	16	6	1/1	1-3	75.00
l Hospital ★	Hanover, N. H.	N. T. Milliken	1,172	20,541	127	108	3	7/1	..	175.00
	Atlantic City, N. J.	D. W. Scanlon	2,062	8,249	312	67	1	7/1	1	None
†Hackensack Hospital ★[4]	Hackensack, N. J.	L. W. Black	.....	2,774	129	43	1	7/1	1	100.00
Jersey City Hospital ★[4]	Jersey City, N. J.	T. J. White	4,992	22,938	687	106	5	Varies	1	35.00
†Newark Beth Israel Hospital ★	Newark, N. J.		1,456	2,008	219	60	1	....	1	.....
†St. Francis Hospital ★	Trenton, N. J.		2,190	.....	320	80	1	....	1	100.00
Albany Hospital ★[4]	Albany, N. Y.	L. W. Gorham	1,940	.....	215	113	5	7/1	1	41.67
†Binghamton City Hospital ★	Binghamton, N. Y.	I. Ershler	2,949	.....	304	66	1	Varies	1	100.00

Numerical and other references will be found on page 1375.

8. INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†*Veterans Administration Hospital*	*Batavia, N. Y.*	*F. F. Kenny*	731	.....	44	18	6	7/1	1-3	275.00
†Beth-El Hospital ★	Brooklyn	M. Dattelbaum	759	9,600	110	27	2	7/1	1-2	100.00
Brooklyn Hospital ★[4]	Brooklyn	E. P. Maynard Jr.	1,722	16,510	150	44	3	7/1	1-2	25.00
Coney Island Hospital ★[4]	Brooklyn	T. L. Longo	1,438	31,197	307	32	3	7/1	1	70.00
Cumberland Hospital ★[4]	Brooklyn	J. J. Guttman	2,124	21,016	338	68	2	7/1	1	70.00
Greenpoint Hospital ★[4]	Brooklyn	A. Klein	1,097	11,426	216	36	3	1/1	1	120.00
Jewish Hospital ★[4]	Brooklyn	....	1,455	22,644	160	57	3	10/1	1	30.00
Kings County Hospital ★	Brooklyn	H. Feinblatt and W. Dock	17,607	20,275	2,809	353	11	7/1	1-2	70.00
Long Island College Hospital ★[4]	Brooklyn	J. H. Crawford	1,706	11,898	130	49	5	7/1	1-2	25.00
†Methodist Hospital ★	Brooklyn	A. T. Mays	1,322	6,783	156	44	5	....	1	.....
Norwegian Lutheran Deaconesses' Home and Hospital ★[4]	Brooklyn	....	.....	.....	.....	..	1	....	1	.....
Buffalo General Hospital ★[4]	Buffalo	J. H. Talbott	2,183	17,341	215	82	7	7/1	1-2	25.00
†Deaconess Hospital ★	Buffalo	....	1,971	.....	229	61	6	7/1	1-3	60.00
Edward J. Meyer Memorial Hospital ★[4]	Buffalo	D. K. Miller	3,450	8,574	467	185	13	7/1	1-4	100.00
Millard Fillmore Hospital ★	Buffalo	J. F. Painton	1,366	.....	151	40	4	....	1-4	50.00
†Clifton Springs Sanitarium and Clinic [4]	Clifton Springs, N. Y.	B. A. Watson	1,415	1,035	16	10	2	7/1	1-3	50.00
Mary Imogene Bassett Hospital ★[4]	Cooperstown, N. Y.	G. M. MacKenzie	734	4,037	55	32	3	7/1	1-2	83.33
Meadowbrook Hospital ★[4]	Hempstead, N. Y.	E. C. Jessup and B. R. Allison	979	.....	136	60	2	4/1	1	115.00
Queens General Hospital ★[4]	Jamaica, N. Y.	A. W. Victor	4,178	11,672	863	330	6	....	1-3	70.00
Charles S. Wilson Memorial Hospital ★[4]	Johnson City, N. Y.	J. Zillhardt	2,372	.....	239	61	1	7/1	1-3	200.00
†Mount Vernon Hospital ★	Mount Vernon, N. Y.	P. Reznikoff	1,527	412	176	46	2	7/1	1	.....
New Rochelle Hospital ★	New Rochelle, N. Y.	C. A. Read	1,736	1,577	185	45	1	7/1	1-3	100.00
Bellevue Hospital, Div. I—Columbia U. ★[4]	New York City	D. W. Richards Jr.	2,840	14,500	291	81	5	7/1	1	70.00
Bellevue Hospital, Div. II—Cornell U. ★[4]	New York City	J. E. Deitrick	2,730	21,000	232	71	4	7/1	1	70.00
Bellevue Hospital, Div. III—N. Y. Univ. ★[4]	New York City	W. S. Tillett	3,200	18,124	290	127	11	7/1	1	70.00
Bellevue Hospital, Div. IV—Open Div. ★[4]	New York City	C. H. Nammack	2,458	17,839	218	72	4	7/1	1	70.00
†Beth Israel Hospital ★[4]	New York City	J. J. Hertz	1,091	25,016	103	27	6	7/1	1-3	50.00
Bronx Hospital ★[4]	New York City	H. Wessler	1,498	4,511	124	24	3	7/1	1-3	75.00
†Doctors Hospital [4]	New York City	....	6,342	.....	181	95	1	1/1, 7/1	1-2	200.00
Flower and Fifth Avenue Hospitals ★[4]	New York City	L. J. Boyd	951	7,442	89	17	3	7/1	1	.....
Fordham Hospital ★[4]	New York City	J. J. McGowan	.....	.....	....	..	4	7/1	1	70.00
Goldwater Memorial Hospital ★[4]	New York City	M. Steele and R. D. Beck	1,972	1,532	325	132	24	7/1	1	50.00
Gouverneur Hospital ★[4]	New York City	S. N. Weber	1,299	36,391	321	38	5	....	1	70.00
Harlem Hospital ★[4]	New York City	O. LaRotonda	4,868	31,130	132	91	4	1/1, 7/1	1	70.00
Lenox Hill Hospital ★[4]	New York City	A. L. Garbat and J. M. Steel	1,311	7,468	131	49	2	7/1	1	50.00
Lincoln Hospital ★[4]	New York City	L. H. Shearer	3,001	19,194	692	179	9	1/1, 7/1	1	70.00
†Memorial Hospital ★[4]	New York City	L. F. Craver	296	7,278	64	30	1	Varies	1-3	15.00
Metropolitan Hospital ★[4]	New York City	L. J. Boyd	3,505	12,252	566	114	6	4/1, 7/1	1	100.00
Montefiore Hospital for Chronic Diseases ★[4]	New York City	....	801	.....	189	103	7	1/1, 7/1	1	50.00
Morrisania City Hospital ★[4]	New York City	E. Flood and S. Biloon	3,618	6,505	830	102	5	7/1	1	70.00
Mount Sinai Hospital ★[4]	New York City	....	.....	.....	....	..	11	1/1, 7/1	1½	50.00
New York City Hospital ★[4]	New York City	H. Marks and C. Dillon	2,938	24,227	441	135	8	7/1	1	70.00
New York *Hospital* ★[4]	New York City	D. P. Barr	1,936	49,373	150	94	20	7/1	1-5	25.00
New York Infirmary ★[4]	New York City	M. E. Manter	347	6,248	17	8	1	7/1	1	75.00
New York Polyclinic Medical School and Hospital ★[4]	New York City	J. Carroll	1,532	5,286	91	12	1	7/1	2	25.00
New York Post-Graduate Medical School and Hospital ★[4]	New York City	W. G. Lough	1,389	34,159	98	32	2	1/1	1	30.00
Presbyterian Hospital ★[4]	New York City	W. W. Palmer	3,591	48,001	274	..	15	....	1-3	41.66
Roosevelt Hospital ★[4]	New York City	H. F. Shattuck and H. C. Thacher	2,342	8,259	311	92	8	7/1	1-2	25.00
†St. Clare's Hospital ★[4]	New York City	J. P. Croce	959	2,805	85	30	2	7/1	2	25.00
St. Luke's Hospital ★	New York City	G. M. Goodwin	2,804	24,878	285	98	7	Varies	1-3	50.00
St. Vincent's Hospital ★[4]	New York City	F. W. Baldwin	3,247	34,857	523	181	4	7/1	1-3	50.00
†*Sydenham Hospital* ★[4]	New York City	....	983	3,113	156	43	2	7/1	1-3	50.00
†Veterans Administration Hospital [4]	New York City	....	3,605	6,864	405	244	30	5/1	1-3	303.33
Genesee Hospital ★[4]	Rochester, N. Y.	C. Boller	1,154	.....	145	65	2	....	1	.....
Rochester General Hospital ★[4]	Rochester, N. Y.	L. F. Allen	1,519	2,878	192	117	4	7/1	1-3	60.00
St. Mary's Hospital ★[4]	Rochester, N. Y.	B. J. Duffy	3,678	4,752	....	..	3	7/1	1	125.00
Strong Memorial and Rochester Municipal Hospitals ★[4]	Rochester, N. Y.	W. S. McCann	3,944	19,843	385	264	13	7/1	1-4	41.66
†Ellis Hospital ★[4]	Schenectady, N. Y.	G. M. Clowe	2,515	.....	275	50	2	7/1	1-3	100.00
†U. S. Marine Hospital ★[4]	Stapleton, S. I. N. Y.	R. H. Smith	2,958	17,864	75	44	6	....	1	.....
Hospital of the Good Shepherd ★[4]	Syracuse, N. Y.	W. D. Ayer	.....	.....	....	..	3	....	1-2	50.00
Grasslands Hospital ★[4]	Valhalla, N. Y.	M. D. Touart	782	9,857	171	92	3	7/1	1-3	75.00
†White Plains Hospital ★[4]	White Plains, N. Y.	E. W. Weber	.....	.....	.....	..	1	7/1	1-3	100.00
Charlotte Memorial Hospital ★[4]	Charlotte, N. C.	T. W. Baker	1,855	897	104	50	2	1/1, 7/1	1	75.00
Duke Hospital ★[4]	Durham, N. C.	E. A. Stead	3,234	41,393	123	82	13	7/1	1	83.33
Watts Hospital ★	Durham, N. C.	W. R. Stanford	2,561	6,253	128	25	1	7/1	1-2	75.00
†James Walker Memorial Hospital ★	Wilmington, N. C.	D. R. Murchison	2,281	3,152	154	42	1	7/1	1-2	100.00
City Hospital ★	Winston-Salem, N. C.	S. F. Pfohl	1,907	4,193	200	39	4	....	1	75.00
North Carolina Baptist Hospital ★[4]	Winston-Salem, N. C.	G. T. Harrell	1,815	5,712	92	48	15	....	1-3	.....
Bismarck Evangelical Hospital	Bismarck, N. D.	....	1,074	842	84	27	1	Varies	1-3	100.00
Trinity Hospital ★	Minot, N. D.	P. H. Rowe	694	15,176	57	41	1	....	1	150.00
City Hospital ★	Akron, Ohio	....	3,203	.....	320	110	2	....	1	100.00
†Peoples Hospital ★[4]	Akron, Ohio	R. G. Jukes	1,322	923	124	33	2	5/1	1-2	150.00
†Aultman Hospital ★[4]	Canton, Ohio	J. Bahrenburg	3,023	.....	202	83	4	7/1	1	.....
Mercy Hospital ★	Canton, Ohio	J. D. O'Brien	2,872	.....	165	34	1	1/1, 7/1	1-3	100.00
Christ Hospital ★	Cincinnati	D. A. Tucker	1,986	5,027	156	47	4	7/1	1-3	75.00
Cincinnati General Hospital ★[4]	Cincinnati	M. A. Blankenhorn	2,407	25,623	718	258	20	7/1	1-3	.....
Deaconess Hospital ★[4]	Cincinnati	L. B. Owens	2,798	.....	152	42	1	1/1	1	125.00
Good Samaritan Hospital ★	Cincinnati	G. C. Bishop	4,046	4,668	243	54	2	7/1	1-2	105.00
Jewish Hospital ★[4]	Cincinnati	R. Robenberg	3,842	.....	225	90	6	7/1	1-3	75.00
City Hospital ★[4]	Cleveland	R. W. Scott	2,436	25,734	544	218	16	7/1	1-4	60.00
Cleveland Clinic Foundation Hospital [4]	Cleveland	R. L. Haden	1,143	75,270	82	20	28	7/1	1-3	100.00
Mount Sinai Hospital ★[4]	Cleveland	H. S. Applebaum	1,334	9,326	136	38	2	7/1	1	100.00
St. Alexis Hospital ★	Cleveland	H. V. Paryzek	2,600	3,334	225	67	2	7/1	1	75.00
St. John's Hospital ★	Cleveland	C. E. Steyer	1,639	.....	142	31	2	7/1	3	100.00
St. Luke's *Hospital* ★	*Cleveland*	L. Taylor	2,338	14,013	207	90	3	6/25	3	60.00
St. Vincent's Charity Hospital ★	Cleveland	C. S. Stone	2,067	2,942	191	57	2	....	1+	75.00
University Hospitals ★[4]	Cleveland	J. T. Wearn	3,517	20,299	292	172	18	7/1	1+	25.00
[illegible] Hospital	Cleveland	....	110	.....	8	8	18	7/1	2-5	.....
† [illegible]	Columbus, Ohio	B. K. Wiseman	1,252	.....	183	39	2	....	1	.....
[illegible] Hospital ★[4]	Columbus, Ohio	B. K. Wiseman	1,227	12,309	145	95	8	7/1	1-3	50.00
[illegible]	Columbus, Ohio	W. F. Millhon	2,590	.....	215	69	1	7/1	1-2	100.00
[illegible]	Dayton, Ohio	A. B. Brower	1,986	1,399	283	117	3	7/1	1-3	75.00
[illegible]	East Cleveland, Ohio	E. A. Marshall	962	1,999	106	39	1	....	2	80.00

Numerical and other references will be found on page 1375.

8. INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Maumee Valley Hospital ★	Toledo, Ohio	N. Morris	1,450	6,379	266	59	2	7/1	1	150.00
St. Vincent's Hospital ★[4]	Toledo, Ohio	C. J. Czarnecki	3,590	3,520	291	43	2	....	1	.....
Toledo Hospital ★[4]	Toledo, Ohio	J. L. Stifel	1,943	472	116	83	2	7/1	3	125.00
St. Elizabeth's Hospital ★[4]	Youngstown, Ohio	R. B. Poling	2,061	924	254	58	1	7/1	1	125.00
Youngstown Hospital ★	Youngstown, Ohio	W. H. Bunn	4,516	467	387	107	2	7/1	1	100.00
St. Anthony Hospital ★	Oklahoma City	P. M. McNeill	2,182	.....	133	60	1	7/1	1	75.00
University Hospitals ★	Oklahoma City	W. Langston	827	9,848	114	38	6	7/1	1-3	35.00
†Emanuel Hospital ★	Portland, Ore.	C. H. Pelmer	1,374	.....	141	51	2	1/1, 7/1	1½	75.00
Good Samaritan Hospital ★	Portland, Ore.	C. P. Wilson	2,562	.....	151	70	2	7/1	1	65.00
†St. Vincent's Hospital ★	Portland, Ore.	L. L. Selling	461	.....	26	11	6	7/1	1-3	75.00
University of Oregon Medical School Hospitals and Clinics ★[4]	Portland, Ore.	L. Selling	1,683	18,615	226	144	5	7/1	3	75.00
†Veterans Administration Hospital	Portland, Ore.	J. H. Mills	1,824	.....	156	47	10	10/1	1-3	275.00
Abington Memorial Hospital ★	Abington, Pa.	J. T. Beardwood Jr.	1,452	3,266	162	54	2	7/1	1-2	50.00
†Veterans Administration Hospital	Aspinwall, Pa.	R. Schwartz	150	.....	6	4	29	Varies	3	.....
Bryn Mawr Hospital ★	Bryn Mawr, Pa.	F. C. Aldridge and N. MacFarlane	472	755	46	15	2	10/1	1	100.00
George F. Geisinger Memorial Hospital ★[4]	Danville, Pa.	W. J. Stainsby	2,029	16,826	133	61	2	7/1	1-2	75.00
†Episcopal Hospital ★	Philadelphia	J. H. Arnett and G. E. Farrar	1,374	6,284	201	..	2	....	1	50.00
Germantown Dispensary and Hospital ★	Philadelphia	S. Bradbury	1,102	7,181	144	50	1	7/1	1-2	50.00
Graduate Hospital of the Univ. of Penn. ★	Philadelphia	G. M. Piersol	907	7,015	77	38	2	7/1	1-2	.....
Hahnemann Hospital ★[4]	Philadelphia	G. H. Wells	2,018	10,676	241	159	2	....	1-2	.....
Hospital of the University of Penn. ★[4]	Philadelphia	O. H. P. Pepper	3,297	22,291	186	109	10	7/1	1-3	25.00
Hospital of the Woman's Med. College ★[4]	Philadelphia	W. G. Leaman	480	3,201	24	7	1	7/1	1-2	50.00
Jefferson Medical College Hospital ★	Philadelphia	H. A. Reimann	3,017	11,098	261	131	8	....	1	.....
Jewish Hospital ★[4]	Philadelphia	....	1,829	.....	259	117	4	7/1	1-2	50.00
†Lankenau Hospital ★	Philadelphia	F. L. Hartmann	737	1,525	93	50	1	7/1	1-3	100.00
Mount Sinai Hospital ★[4]	Philadelphia	A. I. Rubenstone and T. H. Mendell	1,002	9,856	141	73	3	6/1	1-2	50.00
Pennsylvania Hospital ★	Philadelphia	T. M. McMillan	2,005	6,856	286	107	4	Quarterly	1-3	20.00
Philadelphia General Hospital ★[4]	Philadelphia	....	4,941	.....	1,002	..	7	....	1-3	70.00
Presbyterian Hospital ★[4]	Philadelphia	T. G. Schnabel	1,561	2,400	.....	..	1	....	1-3	50.00
Temple University Hospital ★[4]	Philadelphia	R. Kern	1,766	14,305	134	56	8	7/1	3	50.00
Woman's Hospital ★[4]	Philadelphia	....	500	.....	.....	..	1	4/1	1	100.00
Allegheny General Hospital ★	Pittsburgh	E. W. Willetts	1,371	7,222	188	38	2	7/1	1	100.00
Elizabeth Steel Magee Hospital [4]	Pittsburgh	J. D. Heard	1,411	.....	110	30	3	7/1	3	41.67
Mercy Hospital ★[4]	Pittsburgh	W. W. G. Maclachlan	2,141	5,000	229	51	3	9/1	1-3	.....
Montefiore Hospital ★[4]	Pittsburgh	....	1,278	5,024	143	50	2	7/1	2	50.00
Presbyterian Hospital ★[4]	Pittsburgh	A. H. Colwell	1,782	.....	144	35	3	....	1-5	33.00
St. Francis Hospital ★[4]	Pittsburgh	A. W. Sherrill and F. B. Utley	1,447	1,581	155	43	3	....	1	.....
Western Pennsylvania Hospital ★	Pittsburgh	F. A. Evans	2,690	3,156	181	41	1	....	1	75.00
Reading Hospital ★[4]	Reading, Pa.	R. M. Alexander	1,101	1,151	195	97	1	7/1	1	125.00
Robert Packer Hospital ★	Sayre, Pa.	S. D. Conklin	2,955	.....	125	58	5	10/1	1	150.00
Wilkes-Barre General Hospital ★	Wilkes-Barre, Pa.	G. E. Baker	1,695	3,175	171	23	1	Varies	1	100.00
†York Hospital ★	York, Pa.	F. R. Wise	1,189	493	159	26	1	7/1	1	200.00
†Rhode Island Hospital ★	Providence, R. I.	A. M. Burgess	1,905	6,813	387	164	5	7/1	1-3	50.00
Roper Hospital ★	Charleston, S. C.	W. H. Kelley	3,382	5,235	264	106	7	7/1	1-4	25.00
†Veterans Administration Hospital	Columbia, S. C.	J. H. Gibbes	3,865	.....	181	45	10	Varies	1-3	275.00
John Gaston Hospital ★	Memphis, Tenn.	C. H. Sanford	2,240	15,757	413	214	7	7/1	1	32.50
George W. Hubbard Hospital of Meharry Medical College ★	Nashville, Tenn.	W. H. Grant	1,167	3,385	93	27	1	7/1	1	75.00
Nashville General Hospital ★	Nashville, Tenn.	W. T. Snoddy	1,239	12,543	181	61	3	7/1	1	.....
St. Thomas Hospital ★	Nashville, Tenn.	W. R. Cate	1,253	.....	106	39	2	7/1	1-2	75.00
Vanderbilt University Hospital ★[4]	Nashville, Tenn.	H. J. Morgan	2,068	21,954	142	75	5	7/1	1	.....
Baylor University Hospital ★[4]	Dallas, Texas	H. M. Winans	2,085	.....	197	58	3	7/1	1-3	50.00
†Methodist Hospital ★	Dallas, Texas	H. Donald	1,502	928	124	24	1	7/1	1	75.00
Parkland Hospital ★	Dallas, Texas	T. Harrison	.....	.....	.....	..	5	....	1	50.00
†St. Paul's Hospital ★	Dallas, Texas	T. M. Kirksey	1,029	.....	109	23	2	7/1	1-2	50.00
John Sealy Hospital ★[4]	Galveston, Texas	C. T. Stone	1,615	13,491	181	111	10	....	1-3	50.00
Hermann Hospital ★[4]	Houston, Texas	J. A. Greene	1,790	3,710	110	43	3	7/1	1-3	50.00
Jefferson Davis Hospital ★[4]	Houston, Texas	S. B. Weil	2,503[b]	9,879[b]	.....	..	4	7/1	1	50.00
†Methodist Hospital ★[4]	Houston, Texas	H. W. Cumming	1,007	25	49	17	2	7/1	1-3	75.00
Southern Pacific Hospital [4]	Houston, Texas	M. D. Levy	961	11,891	21	10	2	....	1-2	125.00
Scott and White Hospital ★[4]	Temple, Texas	V. M. Longmire	2,014	.....	54	17	15	Varies	2-3	150.00
†Dr. W. H. Groves Latter-Day Saints Hospital ★[4]	Salt Lake City	J. R. Llewellyn	2,114	.....	199	59	2	7/1	1-3	100.00
Salt Lake County General Hospital ★[4]	Salt Lake City	M. M. Wintrobe	1,103	3,272	161	108	4	7/1	1-2	25.00
†Veterans Administration Hospital	Salt Lake City	M. M. Wintrobe	1,300	.....	60	42	12	Varies	1-3	275.00
†Bishop DeGoesbriand Hospital ★[4]	Burlington, Vt.	P. K. French	817	1,046	45	16	1	7/1	1	100.00
Mary Fletcher Hospital ★[4]	Burlington, Vt.	E. L. Amidon	1,472	1,247	62	32	2	7/1	1	150.00
†Veterans Administration Hospital	White River Jct., Vt.	E. R. H. Kurz	1,197	1,034	35	14	6	7/1	1-3	.....
†Alexandria Hospital ★[4]	Alexandria, Va.	H. A. Latane	1,065	.....	107	62	2	7/1	1-2	125.00
†Arlington Hospital [4]	Arlington, Va.	P. Commanduras	201	.....	14	8	1	7/1	1	100.00
University of Virginia Hospital ★[4]	Charlottesville, Va.	H. B. Mulholland	2,536	9,183	158	76	7	7/1	1-4	25.00
Chesapeake and Ohio Hospital ★[4]	Clifton Forge, Va.	J. R. Beckwith and E. A. LeHew	5,563	4,921	56	28	2	7/1	1-2	60.00
†De Paul Hospital ★[4]	Norfolk, Va.	W. A. Martin	1,879	1,057	157	75	1	7/1	1	100.00
Norfolk General Hospital ★[4]	Norfolk, Va.	W. B. Newcomb	2,904	1,426	189	83	3	7/1	1	75.00
†Johnston-Willis Hospital ★[4]	Richmond, Va.	J. M. Hutcheson	880	.....	92	37	1	7/1	1	100.00
Medical College of Virginia Hosp. Div. ★	Richmond, Va.	W. B. Porter	2,655	11,536	204	82	7	7/1	1	46.50
†Veterans Administration Hospital	Richmond, Va.	J. P. Williams	203	.....	6	6	20	Varies	1-3	275.00
†Jefferson Hospital ★	Roanoke, Va.	G. B. Lawson	.....	.....	69	18	1	7/1	1-2	125.00
†Lewis-Gale Hospital ★	Roanoke, Va.	C. D. Nofsinger	1,138	.....	.....	..	1	7/1	1-3	150.00
†Doctors Hospital ★	Seattle	C. I. Krantz	1,417	.....	92	54	1	7/1	1	100.00
King County Hospital ★	Seattle	C. E. Watts	3,436	6,945	739	213	4	7/1	1	125.00
†Providence Hospital ★	Seattle	R. B. Foster	4,485	234	211	54	3	7/1	1-2	100.00
†Swedish Hospital ★	Seattle	E. G. Bannick	1,380[b]	.....	.....	..	1	....	1	.....
Virginia Mason Hospital ★	Seattle	L. J. Palmer	1,532	.....	86	50	6	....	1	.....
†Deaconess Hospital ★[4]	Spokane	L. S. Gilpatrick	1,370	.....	169	14	3	7/1	1-3	150.00
†Northern Permanente Foundation Hosp. ★[4]	Vancouver, Wash.	W. Armstrong	2,930	7,996	76	68	2	....	1	.....
†Beckley Hospital	Beckley, W. Va.	D. C. Ashton	955	9,345	77	20	2	1/1, 7/1	1	150.00
†Charleston General Hospital ★[4]	Charleston, W. Va.	W. A. Thornhill Jr.	2,115	2,921	124	56	3	7/1	1-3	125.00
Chesapeake and Ohio Hospital ★	Huntington, W. Va.	J. P. Webb	1,980	6,421	59	20	4	7/1	1-3	65.00
St. Mary's [illegible]	Huntington, W. Va.	R. J. Stevens	2,318	.....	200	28	1	7/1	1	100.00
†La Crosse [illegible]	La Crosse, Wis.	G. Gunderson	1,399	.....	44	20	1	7/1	1	100.00
†Madison Ger [illegible]	Madison, Wis.	M. Foster	1,400	.....	124	25	1	Varies	1-3	50.00
State of Wisconsin General Hospital ★[4]	Madison, Wis.	O. O. Meyer	4,110	25,371	148	94	16	7/1	3	25.00
Columbia Hospital ★	Milwaukee	E. W. Mason	879	.....	91	34	1	7/1	3	50.00

Numerical and other references will be found on page 1375.

8. INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Milwaukee County Hospital ★[4]	Milwaukee	J. Shaiken	4,711	15,606	939	227	22	Varies	1-3	75.00
†Mount Sinai Hospital ★	Milwaukee	R. A. Frisch	1,034	2,940	114	31	2	....	1	75.00
St. Joseph's Hospital ★	Milwaukee	A. Kustermann	3,089	.....	287	64	1	6/1	1-3	75.00
†Veterans Administration Hospital	Milwaukee	M. Hardgrove	.....	621	64	20	29	7/1	1-3	275.00
Queens Hospital ★[4]	Honolulu, Hawaii		2,674	.....	203	103	3	4/1, 10/1	1-2	.....

Hospitals, 377; Assistant Residencies and Residencies, 2,219

9. MALIGNANT DISEASES

Grady Memorial Hospital ★[4]	Atlanta, Ga.	C. B. Stewart	373	12,940	29	4	2	7/1	...	$ 20.00
Michael Reese Hospital ★[4]	Chicago	E. Uhlmann	4,793	998	....	..	3	....	1-3	50.00
Veterans Administration Hospital	Hines, Ill.	I. Ariel	1,300	.....	238	139	1	....	1-3	275.00
Massachusetts General Hospital ★	Boston		(Included in Surgery)				1	....	1	.....
New England Deaconess Hospital	Boston	L. S. McKittrick	1,624[b]	6,728[b]	....	..	2	1/1, 4/1	1	75.00
Pondville Hospital	Walpole, Mass.	G. L. Parker	758	6,752	43	31	5	....	1	200.00
Westfield State Sanatorium [4]	Westfield, Mass.	F. Hopkins	336	.....	24	23	3	7/1	1-2	200.00
Wayne County General Hospital and Infirmary ★[4]	Eloise, Mich.	P. V. Walker	485	446	185	61	1	7/1	1	197.50
University Hospital ★[4]	Minneapolis	O. H. Wangensteen	286	2,965	5	4	3	7/1	1-3	100.00
Ellis Fischel State Cancer Hospital [4]	Columbia, Mo.		1,145	5,603	41	31	8	7/1	1-2	50.00
Barnard Free Skin and Cancer Hospital	St. Louis	W. E. Leighton	572	9,052	12	5	1	1/1	1	100.00
Jersey City Hospital ★[4]	*Jersey City, N. J.*	*J. B. Faison*	424	2,080	104	22	1	Varies	1	35.00
Brooklyn Cancer Institute [4]	Brooklyn	W. E. Howes	688	6,208	222	49	6	1/1	1+	.....
Roswell Park Memorial Institute [4]	Buffalo	L. C. Kress	2,135	.....	121	113	4	....	1	.....
Meadowbrook Hospital ★	Hempstead, N. Y.	J. W. McChesney	318	2,872	105	48	1	4/1	1	115.00
Memorial Hospital ★[4]	New York City	C. P. Rhoads	5,300	76,614	190	92	32	1/1, 7/1	1	15.00
Montefiore Hospital for Chronic Diseases ★	New York City	D. Laszlo	611	.....	330	173	3	7/1	1	50.00
New York Cancer Institute Hospital [4]	New York City	T. A. Morrissey	833	4,923	473	86	7	7/1	1-2	100.00
Duke Hospital ★[4]	Durham, N. C.		(Included in Surgery)				2	....	1	.....
American Oncologic Hospital [4]	Philadelphia	C. M. Dorrance	657	7,338	35	25	5	6/1, 12/1	1-3	100.00
Jeanes Hospital [4]	Philadelphia	A. E. Bothe	572[b]	8,173[b]	61	24	3	4/1, 9/1	1-3	100.00

Hospitals, 21; Assistant Residencies and Residencies, 94

10. NEUROLOGICAL SURGERY

The following services are approved by the Council and the American Board of Neurological Surgery

Jefferson and Hillman Hospitals ★[4]	Birmingham, Ala.	G. Galbraith	833	834	59	37	2	7/1	1	$ 50.00
Los Angeles County Hospital ★[4]	Los Angeles	C. W. Rand	2,834	871	289	23	3	Varies	3	157.20
†White Memorial Hospital ★	Los Angeles	W. T. Grant	278	.....	..	..	3	7/1	1-3	120.00
Franklin Hospital ★[4]	San Francisco	H. A. Brown	661	.....	24	13	1	7/1	1	200.00
University of California Hospital ★[4]	San Francisco	H. C. Naffziger	462	.....	17	14	2	7/1	1	50.00
†Veterans Administration Hospital [4]	San Francisco	F. W. Lusignan	312	.....	12	12	1	7/1	..	275.00
Hartford Hospital ★[4]	Hartford, Conn.	O. G. Wiedman	526	214	39	24	1	7/1	1-3	50.00
†Grace-New Haven Community Hospital ★[25]	New Haven, Conn.	W. J. German	456	1,182	41	28	4	7/1	1-3	100.00
St. Vincent's Hospital ★	Jacksonville, Fla.	J. G. Lyerly	336	.....	21	13	2	....	1	.....
†Veterans Administration Hospital	Chamblee, Ga.	M. H. Harris	142	.....	5	2	5	7/1	1-3	275.00
†Emory University Hospital ★	Emory University, Ga.	E. F. Fincher	466	394	10	8	2	9/1	1-4	50.00
Chicago Memorial Hospital ★	Chicago	P. C. Bucy	285	600	11	9	2	1/1	1-3	100.00
Illinois Neuropsychiatric Institute [5]	Chicago	E. Oldberg	.....	.....	..	..	3	....	1	.....
Mercy Hospital-Loyola University Clinics ★	Chicago	H. C. Voris	219	51	17	13	1	7/1	1-2	25.00
Passavant Memorial Hospital ★[4]	Chicago	L. Davis	343	.....	28	23	1	....	1	.....
Presbyterian Hospital ★	Chicago	A. Verbrugghen	178	257	13	5	1	1/1	1-3	25.00
St. Luke's Hospital ★[4,7]	Chicago	E. Oldberg	1,210	307	25	16	1	7/1	1-3	25.00
University of Chicago Clinics ★	Chicago	A. E. Walker	158	1,060	16	13	2	7/1	1	25.00
†Veterans Administration Hospital	Hines, Ill.	L. Davis	310	.....	30	4	4	....	1-3	275.00
†University of Kansas Hospitals ★	Kansas City, Kan.		234	.....	18	11	1	....	1	.....
†Louisville General Hospital ★[17]	Louisville, Ky.	R. G. Spurling	217	.....	38	10	2	....	1-2	.....
†Foundation Hospital	New Orleans	D. H. Echols	425	1,346	10	5	2	1/1, 7/1	3	150.00
Johns Hopkins Hospital ★	Baltimore		714	.....	45	26	3	7/1	1	.....
†University Hospital ★[4]	Baltimore	C. Bagley Jr.	432	600	43	35	4	7/1	1-4	50.00
Boston City Hospital ★[4]	Boston	D. Munro	398	.....	76	12	2	....	1	50.00
Lahey Clinic	Boston	G. Horrax	1,000	2,500	24[b]	17[b]	5	....	1	.....
Massachusetts General Hospital ★	Boston	J. C. White	263	.....	40	13	5	....	1-3	41.67
†University Hospital ★[4]	Ann Arbor, Mich.	M. M. Peet	770	1,943	75	44	..	....	1	101.40
†Grace Hospital ★	Detroit	E. S. Gurdjian	220	91	22	9	1	7/1	1-5	125.00
Henry Ford Hospital ★[4]	Detroit	A. S. Crawford	248	1,364	15	6	2	7/1	1-5	200.00
University Hospitals ★[4]	Minneapolis	W. T. Peyton	214	553	25	19	3	7/1	1-3	100.00
Mayo Foundation	Rochester, Minn.	A. W. Adson	(See page 1375)				8	....	1	.....
Barnes Hospital ★	St. Louis	E. Sachs	292	.....	36	25	5	7/1	1-3	25.00
University of Nebraska Hospital ★	Omaha	J. J. Keegan	23	.....	1	1	1	7/1	1-3	50.00
Albany Hospital ★[4]	Albany, N. Y.	E. H. Campbell	601	.....	32	18	3	7/1	1	41.67
Jewish Hospital ★[4]	Brooklyn	J. Siris and I. Tarlov	159	322	18	10	2	7/1	1-2	30.00
Kings County Hospital ★	Brooklyn	E. J. Browder	.....	1,350	251	124	3	7/1	1-3	70.00
Buffalo General Hospital ★	Buffalo	W. B. Hamby	384	85	45	25	3	7/1	1-4	25.00
Bellevue Hospital, Div. III—N. Y. Univ. ★[4]	New York City		(Included in Surgery)				2	....	1	.....
Montefiore Hospital for Chronic Diseases ★	New York City	L. M. Davidoff	282	.....	35	15	3	1/1	1	50.00
†Mount Sinai Hospital ★[4]	New York City		156	.....	16	12	1	Varies	1-3	25.00
Neurological Institute	New York City		(See Presbyterian Hospital)							
Presbyterian Hospital ★[4,7]	New York City	T. J. Putnam	3,702	13,522	126	..	18	....	1	41.66
Strong Memorial and Rochester Municipal Hospitals ★[4]	Rochester, N. Y.	W. P. VanWagenen	267	231	..	..	1	7/1	1-2	41.66
†Christ Hospital ★	Cincinnati	F. H. Mayfield	.....	.....	..	..	1	7/1	1-3	75.00
Cincinnati General Hospital ★	Cincinnati		(Included in Surgery)				2	....	1	.....
Cleveland Clinic Foundation Hospital [4]	Cleveland	W. J. Gardner	719	4,936	51	24	5	7/1	1-3	100.00
White Cross Hospital ★	Columbus, Ohio	H. E. LeFever	107	.....	25	10	1	7/1	1-2	100.00
†University Hospitals ★	Oklahoma City	H. Wilkins	167	415	26	4	1	7/1	1-2	35.00
†University of Oregon Medical School Hospitals and Clinics ★[26]	Portland, Ore.	J. Raaf	721	.....	23	17	3	7/1	3	75.00
Hospital of the Univ. of Pennsylvania ★[4]	Philadelphia	F. C. Grant	693	309	56	44	6	Varies	1-3	50.00
Temple University Hospital ★[4]	Philadelphia	M. Scott	455	1,028	41	13	1	7/1	3	50.00
Baptist Memorial Hospital ★	Memphis, Tenn.	R. E. Semmes	825	.....	52	25	4	7/1	1	.....
Vanderbilt University Hospital ★[4]	Nashville, Tenn.	C. Pilchner	(Included in Surgery)				2	....	1	.....
†Methodist Hospital ★[4]	Houston, Texas	J. Greenwood Jr.	345	.....	19	11	1	Varies	1-3	75.00
†Veterans Administration Hospital	White River Jct. Vt.	H. L. Heyl	370	624	3	2	1	Varies	1-3	.....
University of Virginia Hospital ★[4]	Charlottesville, Va.	W. G. Crutchfield	646	644	34	7	4	7/1	1-3	50.00
Medical College of Virginia, Hosp. Div. ★	Richmond, Va.	C. C. Coleman	926	365	54	23	3	7/1	1	40.50

Hospitals, 58; Assistant Residencies and Residencies, 156

Numerical and other references will be found on page 1375.

11. NEUROLOGY

The following services are approved by the Council and the American Board of Psychiatry and Neurology
(See footnotes 1, 2, and 3 for number of years credit)

United States Army.—Residencies available to medical officers, U. S. Army.
†Letterman General Hospita[illegible] ★[1] ..... San Francisco
†Walter Reed General Hosp[illegible] ★[1] ..... D. C.
Brooke General Hospital ★[1] ..... Texas

United States Navy.—Residencies available to medical officers, U. S. Navy.
†U. S. Naval Hospital ★[1] ..... Bethesda, Md.

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Los Angeles County Hospital ★[3,4]	Los Angeles	S. O. Ingham	1,934	1,860	611	173	2	Varies	2	$157.20
†University of California Hospital ★[1]	San Francisco	C. D. Aring	.....	2,672	..	..	3	7/1	1	50.00
†Veterans Administration Hospital [1]	Van Nuys, Calif.	H. N. Roback	429	1,008	19	17	3	7/1, 7/1	3	275.00
[illegible]ital ★[2,4]	Washington, D. C.	W. Freeman	320	.....	45	17	1	7/1	1-3	75.00
[illegible]rsity Hospital ★[2]	Washington, D. C.	W. Freeman	82	395	1	..	2	....	1	.....
[illegible]	Chicago	V. Gonda	772	1,918	131	25	1	Varies	1-3	27.50
†Illinois Neuropsychiatric Institute [1]	Chicago	P. Bailey	520	9,213	45	41	1	9/1	1	35.00
St. Luke's Hospital ★[2]	Chicago	F. J. Gerty	(See Neurological Surgery)				1	7/1	1-3	25.00
University of Chicago Clinics ★[2]	Chicago	R. B. Richter	147	2,700	9	7	1	7/1	1	25.00
Veterans Administration Hospital [1]	Hines, Ill.	L. J. Pollock	1,200	2,500	6	4	20	Varies	3	203.23
†Methodist Hospital ★[1,4]	Indianapolis	E. R. Smith	201	.....	7	2	1	7/1	1-2	200.00
University Hospitals ★[3,4]	Iowa City	A. L. Sahs	1,141	1,326	38	20	3	7/1	1	40.00
Charity Hospital of Louisiana ★[3,4,5]	New Orleans	....	775	5,528	25	12	3	7/1	1-3	25.00
Baltimore City Hospital ★[3,4]	Baltimore	J. W. Magladery	.....	.....	..	..	1	7/1	1	35.00
Boston City Hospital ★[3,4]	Boston	D. D. Brown	379	3,252	23	17	10	....	1	50.00
†Joseph H. Pratt Diagnostic Hospital [1]	Boston	R. D. Adams	400	.....	..	..	1	7/1	1	83.33
Massachusetts General Hospital ★[3]	Boston	E. S. Kubik	250	6,558	15	10	2	7/1	1-3	41.67
†Veterans Administration Hospital [1]	Boston	S. Tartakoff	730	.....	141	58	2	4/1, 10/1	1	275.00
†Veterans Administration Hospital [1]	Framingham, Mass.	W. Bloomberg	.....	.....	..	..	15	3/1, 9/1	1-3	.....
University Hospital ★[3,4]	Ann Arbor, Mich.	C. D. Camp	600	4,718	18	13	5	Varies	..	101.40
Henry Ford Hospital ★[1,4]	Detroit	T. J. Heldt	712	8,893	22	7	5	7/1	1-3	200.00
Wayne County General Hospital and Infirmary ★[1,4]	Eloise, Mich.	R. T. Costello	822	1,618	23	10	1	7/1	1	197.50
†University Hospitals ★[1,4]	Minneapolis	A. B. Baker	450	2,818	21	17	9	7/1	1-3	100.00
†Veterans Administration Hospital [1]	Minneapolis	A. B. Baker	326	974	32	12	5	....	1	275.00
Mayo Foundation [3]	Rochester, Minn.	H. W. Woltman	(See page 1375)				10	....	1-3	.....
Homer G. Phillips Hospital ★[3,5]	St. Louis	E. F. Gleden	883	895	61	16	2	7/1	1	50.00
Brooklyn Hospital ★[2]	Brooklyn	E. J. Browder	.....	.....	..	..	2	7/1	1	25.00
Kings County Hospital ★[3]	Brooklyn	A. Rabiner	3,290	1,995	642	57	4	7/1	1-2	70.00
Bellevue Hosp., Div. II—Cornell Univ. ★[3,4]	New York City	F. Kennedy	400	5,500	45	35	3	7/1	1-3	45.00
Bellevue Hosp., Div. III—N. Y. Univ. ★[3,4]	New York City	S. B. Wortis	2,400	1,000	..	..	4	7/1	1	45.00
Goldwater Memorial Hospital ★[2,4,5]	New York City	E. D. Friedman and E. G. Zabriski	676	415	90	23	10	7/1	1	50.00
Lenox Hill Hospital ★[3,4]	New York City	T. K. Davis	417	1,102	17	8	1	7/1	1	50.00
Metropolitan Hospital ★[2,4]	New York City	S. P. Jewett	.....	1,582	11	2	1	7/1	1	100.00
Montefiore Hospital for Chronic Dis. ★[3,4]	New York City	H. H. Merritt	462	.....	20	11	5	1/1, 7/1	1	50.00
Morrisania City Hospital ★[2,4]	New York City	N. Savitsky	.....	790	..	..	2	7/1	1	70.00
Mount Sinai Hospital [3,4]	New York City	....	.....	.....	..	..	0	7/1, 11/1	1½	50.00
Neurological Institute	New York City	....	(See Presbyterian Hospital)							
New York City Hospital ★[3,4]	New York City	J. H. Nolan	488	901	140	26	1	7/1	1	120.00
Presbyterian Hospital ★[3,4]	New York City	T. J. Putnam	(See Neurosurgery)				1	....	1	41.66
†Veterans Administration Hospital [1]	New York City	H. L. Flowers	383	.....	25	6	2	7/1	1-3	275.00
†Rochester General Hospital ★[1,4]	Rochester, N. Y.	G. R. Lavine and P. W. Prew	.....	53	..	..	1	7/1	1	60.00
Duke Hospital ★[3,4]	Durham, N. C.	R. Graves	145	1,885	2	2	1	7/1	1	83.33
Cincinnati General Hospital ★[3]	Cincinnati	H. D. McIntyre	(Included in Internal Med.)				2	....	1	.....
†Cleveland Clinic Foundation Hospital [1,4]	Cleveland	L. J. Karnosh	.....	4,936	51	24	1	7/1	1-3	100.00
Hospital of the Univ. of Pennsylvania ★[3,4]	Philadelphia	G. D. Gammon	456	2,865	9	5	2	Varies	1-2	50.00
Jefferson Medical College Hospital ★[3]	Philadelphia	B. J. Alpers	656	2,306	36	12	3	....	1	.....
†Philadelphia General Hospital ★[1,4]	Philadelphia	....	1,739	.....	529	..	3	....	1-3	70.00
Temple University Hospital ★[3,4]	[illegible]	F. Gilpin	275	521	14	3	1	7/1	3	50.00
†St. Francis Hospital ★[1]	[illegible]	R. O'Toole	.....	.....	..	..	1	....	1	.....
†Galveston State Psychopathic Hospital [1]	[illegible]	R. Ewalt	162	2,590	3	2	6	....	1-3	200.00

Hospitals, 48; Assistant Residencies and Residencies, 173

12. OBSTETRICS AND GYNECOLOGY

The following services are approved by the Council and the American Board of Obstetrics and Gynecology
(See footnotes 1, 2 and 3 for number of years credit)

United States Army.—Residencies available to medical officers, U. S. Army.
Fitzsimons General Hospital ★[1] (OBG)† ..... Denver.
Walter Reed General Hospital ★[1] (OBG) ..... Washington, D. C.

United States Navy.—Residencies available to medical officers, U. S. Navy.
U. S. Naval Hospital ★[1] (OBG) ..... Long Beach, Calif.
U. S. Naval Hospital ★[1] [illegible] ..... Oakland, Calif.
U. S. Naval Hospital ★[2] [illegible] Calif.
U. S. Naval Hospital ★[2] [illegible]es, Ill.
U. S. Naval Hospital [1] (OBG) [illegible], Md.
U. S. Naval Hospital ★[3] (OBG)† ..... Bethesda, Md.
U. S. Naval Hospital ★[1] (OBG) ..... Chelsea, Mass.
U. S. Naval Hospital ★[1] (OBG) ..... Brooklyn
U. S. Naval Hospital ★[1] [illegible]
U. S. Naval Hospital ★[1] [illegible] Va.

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [6]		Outpatient Visits		Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
				OB	Gyn	OB	Gyn				
Jefferson and Hillman Hospitals ★[3,4]	Birmingham, Ala.	J. R. Garber and W. N. Jones	OBG	3,078	1,964	6,187	5,942	4	7/1	1	$ 30.00
Norwood Hospital ★[1]	Birmingham, Ala.	T. M. Boulware	OB†	1,297	.....	5,317	.....	1	1/1	1	100.00
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company ★[2]	Fairfield, Ala.	O. T. West	OB	1,401	.....	7,672	.....	2	7/1	1-3	200.00
St. Vincent Infirmary ★[1]	Little Rock, Ark.	C. Rodgers	OB†	1,704	.....	7,800	.....	1	7/1	1	50.00
		C. Rodgers	Gyn†	.....	998	.....	4,500	2	7/1	1	50.00
University Hospitals ★[1,4]	Little Rock, Ark.	C. R. Henry and J. H. Sanderlin	OBG†	1,116	472	7,340	3,312	2	....	1-3	.....
San Joaquin General Hospital ★[1]	French Camp, Calif.	S. Hanson	OB	607	.....	3,534	.....	3	7/1	1	200.00
California Hospital ★[2,4]	Los Angeles	D. G. Tollefson	OB†	3,332	.....	647	.....	6	7/1	3	100.00
Los Angeles County Hospital ★[3,4]	Los Angeles	B. J. Hanley	OBG	5,732	1,610	1,393	4,487	6	Varies	3+	157.20
Presbyterian Hospital-Olmsted Memorial ★[1]	Los Angeles	J. C. Irwin	OB†	2,023	.....	.....	.....	8	7/1	1	45.00

Numerical and other references will be found on page 1375.

12. OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated[6]		Outpatient Visits		Asst. Res. and Residencies[8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
				OB	Gyn	OB	Gyn				
Queen of Angels Hospital ★[2]	Los Angeles	A M. McCarthy	OBG†	3,523	1,460	202	437	3	7/1	3	100 00
White Memorial Hospital ★[3,4]	Los Angeles	R. J. Thompson	OBG	1,563	803	9,352	6,833	6	....	1 3	125 00
[illegible] Hospital ★[3,4]	Oakland, Calif.	C. A DePuy	OBG	925	497	....	.	2	7/1	1 3	155 00
[illegible] ★[4]	Oakland, Calif.	R King	OBG†	701	539	.....	6,867	4	7/1	1	75 00
[illegible]	Oakland, Calif.	C. Hall and E. N. Ewer	OBG†	2,002	728	.....	..	3	7/1	1 3	110 00
[illegible] Memorial Hospital ★[1]	Pasadena, Calif	W. C Rogers	OBG†	2,255	945	...	...	1	9/1	1	150 00
Children's Hospital ★[3,4]	San Francisco	H. A Stephenson	OBG	2,474	1,007	3,444	1,037	3	Varies	1 2	50 00
Mary's Help Hospital ★[1]	San Francisco	C L Cooley	OBG†	1,781	157	1,432	514	1	7/1	1	250 00
St Mary's Hospital ★[1]	San Francisco	P H Arnot	OB	2,264	...	.....	...	1	4/1	1	100 00
San Francisco Hospital ★[3,4]	San Francisco	W. G Moore	OBG	1,540	691	...	.	4	Varies	1	175 00
Stanford University *Hospitals* ★[3,4]	San Francisco	L A Emge	OBG	2,324	913	...	14,536	6	7/1	1 2	50 00
University of California Hospital ★[3,4]	San Francisco	H J Traut	OBG	1,016	813	4,718	6,577	5	7/1	1	50 00
Santa Clara County Hospital ★[1,4]	San Jose, Calif.	A Shufelt	OBG	347	.....	..	..	1	....	1 2	185 00
Colorado General Hospital ★[3,4]	Denver	C B Ingraham	OBG	566	312	2,368	2,075	2	4/1	1 2	85 00
Denver General Hospital ★[1]	Denver	B B Jaffa and W. W. King	OBG†	587	752	1,710	440	1	1/1	1	50 00
St. Luke's Hospital ★[2]	Denver	J R Evans	OBG†	1,756	872	....	.	1	12/1	1	....
Hartford Hospital ★[3,4]	Hartford, Conn.	R W Storrs	OBG†	5,455	2,155	4,272	560	3	7/1	1 3	50 00
Grace New Haven Community Hospital											
Grace Unit ★[3]	New Haven, Conn	H B Perrins	OBG	1,680	692	.	.	3	7/1	3	40 00
New Haven Unit ★[3,4]	New Haven, Conn	A H Morse	OBG	2,428	....	7,557	..	4	7/1	1	40 00
Hospital of St. Raphael ★[1]	New Haven, Conn	C E Johnson	OB	1,987	.....	642	..	3	7/1	1	75 00
Lawrence and Memorial Assoc., Hospital ★[1]	New London, Conn	C G Barnum	OBG†	1,863	369	..	.	4	7/1	1	105 00
Columbia Hospital for Women and Lying In Asylum [3,4]	Washington, D C	......	OBG	1,323	3,615	6,588	3,022	8	1/1	1 2	None
Doctors Hospital ★[1]	Washington, D C	J W Warner	OBG†	1,580	902	.		1	7/1	1	100 00
Freedmen's Hospital ★[3,4]	Washington, D C	J W Ross	OBG	2,106	980	4,332	2,987	3	7/1	1 3	75 00
Gallinger Municipal Hospital ★[3,4]	Washington, D C	J Parks	OBG	3,709	599	3,249	2,550	7	7/1	1 3	75 00
Garfield Memorial Hospital ★[3,4]	Washington, D C	H P Parker	OB	3,565	..	3,595	.	3	....	1	75 00
Georgetown University Hospital ★[3,4]	Washington, D C	J J Mundell and I A Martel	OBG	1,780	973	387	437	2	1/1, 7/1	1 3	30.50
Providence Hospital ★[2]	Washington, D C	G Ellis	OB	3,000	.....	1,002	.	1	......	1	.....
Sibley Memorial Hospital ★[2,4]	Washington, D C	J Kotz	OB	3,005	....	..		4	... .	1 2	100 00
St Luke's Hospital ★[1]	Jacksonville, Fla	S R Norris	OB†	1,897	..	2,400	.	2	7/1	1	125 00
Crawford Long Memorial Hospital ★[2]	Atlanta, Ga	M T Benson Jr	OBG	1, 50	100	1,800	290	3	7/1	1	100 00
Grady Memorial Hospital ★[3,4]	Atlanta, Ga	J B Cross	OBG	1,360	1,053	24,920	8,956	12	7/1	1	20 00
University Hospital ★[3,4]	Augusta, Ga	R Torpin	OBG	2,471	991	5,437	906	4	7/1	1 2	40 00
Augustana Hospital ★[1]	Chicago	W H Browne	OBG†	1,025	1,043	747	1,555	1	7/1	1 3	50 00
Chicago Lying In Hospital and Dispensary	Chicago			(See University of Chicago Clinics)							
Chicago Maternity Center [1,4]	Chicago	B E Tucker	OB	1,812[11]	.....	6,501[11]		35	1/1	1	75 00
Cook County Hospital ★[3,4]	Chicago	J F Fitzgerald	OB	7,011	.....	8,475	..	8	Varies	1 3	27 50
Grant Hospital ★[1,4]	Chicago	F H Falls	OB(G)†	1,596	....	..	..	1	7/1	1 3	125 00
Henrotin Hospital ★[1,4]	Chicago	F I Cornell	OB	854	..	681	..	1	7/1	1 2	100 00
Illinois Masonic Hospital ★[1,4]	Chicago	F. J Roos	OBG	788	583	.	.	1	....	1	.....
Lewis Memorial Maternity Hospital [3,4]	Chicago	H. E Schmitz	OBG	1,618	36	11,351	560	4	7/1	1 5	50 00
Lutheran Deaconess Home and Hospital ★[1]	Chicago	.....	OB†	985	..	..		1	7/1	1	100 00
Mercy Hospital Loyola Univ. Clinics ★[3,4]	Chicago	H. E Schmitz	OBG	717	791	462	1,662	2	7/1	1 2	25 00
Michael Reese Hospital ★[3,4]	Chicago	I. F Stein	OBG	2,911	1,454	3,109	1,752	9	... .	1-3	25 00
Mount Sinai Hospital ★[1,4]	Chicago	....	OBG	1,322	506	552	410	1	7/1	1	50 00
Passavant Memorial Hospital ★[3,4]	Chicago	A H Curtis	Gyn	.....	742	...	555	2	.....	1	None
Presbyterian Hospital ★[3]	Chicago	E D Allen	OBG	3,233		1,553		5	5/1, 9/1	1-3	25 00
Provident Hospital ★[3,4]	Chicago	W. W. Gibbs and P M Santos	OBG	1,353	716	2,420	1,871	4	.....	1	.....
Ravenswood Hospital ★[1,4]	Chicago	M Field	OBG†	1,380	576	260	587	2	7/1	1 2	150 00
Research and Educational Hospitals ★[3,4]	Chicago	F H Falls	OB	877	....	6,890	.	2	7/1	1 3	55 00
St Anne's Hospital ★[3]	Chicago	R J Hawkins	OB	2,108	...	...	..	3	1/1, 7/1	1 3	125 00
St Elizabeth's Hospital ★[1]	Chicago	J R Lavieri	OBG†	2,474	985	.	..	2	....	3	60 00
St. Joseph Hospital ★[1,4]	Chicago	C Geiger	OB	1,396	.	.	.	1	....	1	.....
		....	Gyn	..	638	.		1	......	1	.....
St. Luke's Hospital ★[3,4]	Chicago	H O Jones	OBG	1,591	1,010	4,276	1,958	4	7/1	1 3	25 00
St Mary of Nazareth Hospital ★[1]	Chicago	M Uznanski	OBG†	2,029	415		.	1	....	1	100 00
St Vincent's Infant and Maternity Hosp [1,4]	Chicago	H. E Schmitz	OB	463	...	2,061	.	1	......	1	.....
Swedish Covenant Hospital ★[1,4]	Chicago	G L Rosene and R. A Lifvendahl	OBG†	1,854	721			2	2/1	1	125 00
University of Chicago Clinics ★[3,4]	Chicago	W J. Dieckmann	OBG	4,574	906	27,487	10,343	8	7/1	1 3	25 00
Wesley Memorial Hospital ★[3,4]	*Chicago*	G H. Gardner	OB	1,680	..			1	1/1, 7/1	1 3	25 00
		G. H Gardner	Gyn		828			2	1/1, 7/1	1 3	25 00
Women and Children's Hospital ★[2,4]	Chicago	L E Nadelhoffer	OB	1,227		1,076	..	2	7/1	1 3	75 00
Evanston Hospital ★[3]	Evanston, Ill.	W. C Danforth	OBG†	2,220		1,500		3	......	3	60 00
St Francis Hospital ★[3]	Evanston, Ill.	J A Bremner and E C. McGill	OBG	2,184	755	.....	...	1	... .	1	75.00
Little Company of Mary Hospital ★[2]	Evergreen Park, Ill	P Lawler	OB	2,430	...	.....	..	2	1/1	1	100 00
West Suburban Hospital ★-	Oak Park, Ill.	F H Falls	OBG	3,168	1,059	..		2	4/1, 7/1	1	150 00
St Francis Hospital ★[2,4]	Peoria, Ill.	E P Burt	OBG	1,921	890	448	319	2	4/1, 7/1	1 3	150 00
Indianapolis City Hospital ★[3,4]	Indianapolis	H F. Beckman and J. W Hofmann	OBG	1,317	926	6,590	2,769	3	......	1	.....
Indiana University Medical Center ★[3,4]	Indianapolis	H. F Beckman	OB	1,809	..	2,940	.	3	.. .	1 3	33 33
Methodist Hospital ★[2,4]	*Indianapolis*	D. L Smith	OB	4,250		.	..	2	7/1	1 2	200 00
St Elizabeth Hospital ★[2]	La Fayette, Ind	F Peyton	OBG†	1,021	900	.		4	7/1	1	75 00
University Hospitals ★[3,4]	Iowa City	E D Plass	OBG	870	986	511	1,816	8	7/1	1	40 00
University of Kansas Hospitals ★[3]	Kansas City, Kan	L A Calkins	OBG	889	578	3,453	3,007	4	.. ...	1 3	... .
St Francis Hospital ★[2]	Wichita, Kan	R. A West	OBG	3,866		.		1	... ..	1	.
Louisville General Hospital ★[3]	Louisville, Ky	C Hibbitt	OBG	1,657	642	9,445	6,316	6	4/1	1 4	45 00
St Joseph Infirmary ★[1]	Louisville, Ky.	E. R Cadden	OBG†	1,680	1,518	242		1	....	1	.....
Charity Hospital of Louisiana ★[3,4]	New Orleans	....	OBG	7,114	3,898	33,869	18,872	20	7/1	1 3	25 00
Touro Infirmary ★[3]	New Orleans	....	OB	1,759	.....	3,579	.	2	7/1	1	25 00
			Gyn	...	1,428	.....	1,573	2	7/1	1	25 00
Baltimore City *Hospitals* ★[3,4]	Baltimore	I	OB	1,600	....	....	....	4	7/1	1	35 00
Bon Secours Hospital ★[1,4]	Baltimore	I E Novak	OBG†	996	736	130	534	2	4/1	1 3	70 00
Franklin Square Hospital ★[1,4]	Baltimore	I. A Seigel	OB	1,568	.....	1,707	...	4	....	1	.
Hospital for Women ★[1,4]	Baltimore	J. Bergland	OB	1,505	.....	2,739	.....	2	4/1	1	75 00
Johns Hopkins Hospital ★[3,4]	Baltimore	N. J. Eastman	OB	2,834	.....	13,969	.....	5	7/1	1+	.....
		R W. TeLinde	Gyn	.....	2,222	.....	12,341	5	7/1	1+	.....
Maryland General Hospital ★[2]	Baltimore	K B Boyd and E H *Kloman*	OBG	935	467	178	90	3	7/1	1 3	50 00
Mercy Hospital ★[3]	Baltimore	E P Smith and T K Galvin	OBG	1,293	895	.....	.....	3	7/1	1	50 00
Provident Hospital and Free Disp ★[1,4]	Baltimore	L H. Douglass	OB	255	.....	.....	.....	1	....	1	.....
St. Agnes Hospital ★[1]	Baltimore	D. P Bowe and E *Novak*	OBG†	1,608	812	532	140	3	....	1	.....

Numerical and other references will be found on page 1375.

12. OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated[9]		Outpatient Visits		Asst. Res. and Residencies[8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
				OB	Gyn	OB	Gyn				
St. Joseph's Hospital *[3]	Baltimore	H. B. McNally and T. K. Galvin	OBG	1,660	931	3,217	1,070	3	7/1	1-3	50.00
Sinai Hospital *[2,4]	Baltimore	A. F. Guttmacher	OB	2,462	.....	.....	.....	3	7/1	1-3	25.00
South Baltimore General Hospital *[1,4]	Baltimore	F. Kaltreider	OB†	834	.....	770	.....	1	7/1	1	.....
Union Memorial Hospital *[1]	Baltimore	J. M. Haws	OB	1,102[b]	.....	2,416[b]	.....	2	7/1	1	.....
University Hospital *[3,4]	Baltimore	L. H. Douglass	OB	2,203	.....	12,678	.....	4	7/1	1-2	75.00
		J. M. Hundley Jr.	Gyn	.....	916	.....	5,778	6	7/1	1-2	75.00
West Baltimore General Hospital *[1,4]	Baltimore	D. M. Dixon and C. W. Vest	OBG†	1,711	467	1,541	218	2	....	1	.....
Boston City Hospital *[3,4]	Boston	H. V. Hyde and F. L. Good	OBG	1,976	1,016	5,484	4,619	2	....	1-2	50.00
Boston Lying-In Hospital [3,24]	Boston	F. C. Irving	OB	2,754	.....	570	.....	9	1/1, 7/1	1+	50.00
Carney Hospital *[2]	Boston	L. E. Phaneuf	OBG	953	768	2,156	685	3	7/1[c]	1-2	.....
Evangeline Booth Maternity Hospital and Home [1,4]	Boston	A. K. Paine	OB	781	.....	3,220	.....	2	4/1, 7/1	1	83.33
Massachusetts Memorial Hospitals *[2,4]	Boston	C. W. Sewall	OB	1,235	.....	4,101	.....	2	7/1	1-2	50.00
New England Hospital for Women and Children *[1,4]	Boston	M. Woodman	OB†	2,342	.....	5,071	.....	1	1/1	1	50.00
Free Hospital for Women [3,4]	Brookline, Mass.	F. A. Pemberton	Gyn	.....	2,228	.....	11,407[b]	8	....	1	.....
Cambridge City Hospital *[2]	Cambridge, Mass.	F. J. Lynch	OBG†	1,517	654	1,797	224	1	1/1	1-3	58.33
St. Joseph's Mercy Hospital *[2]	Ann Arbor, Mich.	W. Belser and H. H. Cummings	OBG†	1,161	454	.....	.....	1	....	2	125.00
University Hospital *[3,4]	Ann Arbor, Mich.	N. F. Miller	OBG	1,143	763	7,018		5	....	1	101.40
City o[illegible]ital *[3,4]	Detroit	W. Seeley	OBG	c	800	c	2,771	2	7/15	1-4	149.07
Florenc[illegible]	Detroit	H. A. Pearse	OBG	1,520	.....	.....	.....	5	....	1-3	110.00
Grace [illegible]	Detroit	O. W. Pickard	OBG	2,387	1,583	45	1,306	6	7/1	1-3	75.00
Harper Hospital *[3,4]	Detroit	W. F. Seeley	OBG	2,422[b]	984[b]	.....	.....	5	....	1	113.00
Henry Ford Hospital *[3,4]	Detroit	J. P. Pratt	OBG	1,763	837	6,909	16,555	4	7/1	1-4	200.00
Herman Kiefer Hospital [3,4]	Detroit	W. F. Seeley	OBG	1,907	f	.....	f	1	7/1	1-4	133.00
Mt. Carmel Mercy Hospital *[3]	Detroit	C. N. Swanson	OB	4,795	.....	.....	.....	4	7/1	1-4	100.00
Providence Hospital *[3]	Detroit	R. Alles	OBG	3,184	1,421	.....	.....	4	....	1	.....
St. Joseph's Mercy Hospital *[1]	Detroit	....	OBG†	1,757	1,265	.....	368	1	....	1	200.00
St. Mary's Hospital *[3]	Detroit	V. J. Turcotte	OBG	1,927	1,183	152	252	6	....	3	140.00
Woman's Hospital *[3,4]	Detroit	L. E. Daniels and H. M. Nelson	OBG	2,000	.....	.....	.....	4	7/1	1-4	100.00
Butterworth Hospital *[2,4]	Grand Rapids, Mich.	L. S. Griffith	OBG†	3,450	1,080	.....	927	3	7/1	1-3	100.00
St. Mary's Hospital *[2]	Grand Rapids, Mich.	J. H. Benton	OBG†	2,177	650	.....	.....	1	....	1	.....
Saginaw General Hospital *[2]	Saginaw, Mich.	C. E. Toshach	OB†	1,503	.....	.....	.....	3	7/1	1-2	75.00
St. Mary's Hospital *[2]	Duluth, Minn.	J. R. Moe	OB	1,430[b]	.....	.....	.....	1	....	1	.....
Abbott Hospital [1]	Minneapolis	R. E. Swanson	OB†	584	.....	.....	.....	1	....	1	.....
Maternity Hospital [1]	Minneapolis	A. W. Arnold	OB†	1,030	.....	2,498	.....	2	Varies	1	.....
Minneapolis General Hospital *[3,4]	Minneapolis	L. A. Lang	OBG	394	472	1,270	1,193	1	1/1, 7/1	1-3	100.00
Northwestern Hospital *[1]	Minneapolis	S. Solhaug	OBG†	1,325	1,134	.....	.....	1	....	1	150.00
St. Barnabas Hospital *[1,4]	Minneapolis	I. L. Cameron	OBG†	1,036	550	.....	.....	1	....	1	.....
St. Mary's Hospital *[1]	Minneapolis	L. A. Lang	OB	2,749	.....	.....	.....	1	11/1	1	150.00
University Hospitals *[3,4]	Minneapolis	J. L. McKelvey	OBG	344	571	688	2,833	5	7/1	1	100.00
Mayo Foundation [3]	Rochester, Minn.	R. D. Mussey	OBG	(See page 1375)				12	....	1	.....
Ancker Hospital *[3]	St. Paul	A. G. Schulze	OBG	203	239	621	990	1	....	3	91.50
Charles T. Miller Hospital *[3]	St. Paul	R. S. Countryman and E. O. Hartley	OBG	2,108	611	1,349	814	2	1/1	1-3	100.00
Kansas City General Hospital No. 1 *[3]	Kansas City, Mo.	P. A. Gempel	OBG	747	740	2,767	3,268	4	7/1	4	50.00
DePaul Hospital *[2]	St. Louis	L. M. Riordan	OBG†	2,908	375	182		1	7/1	1-2	.....
Homer G. Phillips Hospital *[3,4]	St. Louis	T. K. Brown	OBG	1,682	1,055	.....	2,934	5	7/1	1	50.00
Jewish Hospital *[3]	St. Louis	M. Meyerhardt and S. Soule	OBG	2,201		.....	.....	2	....	1	50.00
Missouri Baptist Hospital *[1]	St. Louis	J. B. O'Neill	OBG†	1,152	1,060	.....	.....	1	1/1	1	70.00
St. Louis City Hospital *[3,4]	St. Louis	....	OBG	1,140	1,010	1,416	1,527	7	7/1	1	50.00
St. Louis Maternity Hospital [3,4]	St. Louis	W. Allen	OBG	3,144	k	5,492	k	3	7/1	1-3	25.00
St. Luke's Hospital *[2]	St. Louis	O. S. Krebs	OBG	910	589	.....	.....	1	7/1	1	75.00
St. Mary's Group of Hospitals *[3]	St. Louis	J. A. Hardy Jr.	OBG	5,168		13,009		8	Varies	3	35.00
Creighton Memorial St. Joseph's Hosp. *[3,4]	Omaha	M. E. Grier	OBG	1,706	1,321	1,449	1,202	1	7/1	1-2	100.00
University of Nebraska Hospital *[3,4]	Omaha	E. C. Sage	OBG	249	400	676	2,114	1	7/1	1-3	50.00
Cooper Hospital *[2]	Camden, N. J.	A. B. Davis and G. B. German	OB	2,844	.....	8,888	.....	3	....	1-3	83.33
Jersey City Hospital *[3,4]	Jersey City, N. J.	T. Brennock	Gyn	.....	869	.....	4,163	2	Varies	1	35.00
Margaret Hague Maternity Hospital [3,4]	Jersey City, N. J.	S. A. Cosgrove	OB	9,370	.....	21,101	.....	17	Quarterly	1-3	50.00
Monmouth Memorial Hospital *[1]	Long Branch, N. J.	R. A. MacKenzie	OB†	1,294	.....	333	.....	1	....	1	.....
Paterson General Hospital *[1]	Paterson, N. J.	H. H. Nye	OB†	1,774	.....	664	.....	1	....	1	.....
Albany Hospital *[2,4]	Albany, N. Y.	A. J. Wallingford	Gyn	.....	2,200	.....	.....	2	7/1	1	41.67
Anthony N. Brady Maternity Home [2,4]	Albany, N. Y.	A. L. Madden	OB	2,318	.....	2,740	.....	2	....	2	100.00
Beth-El Hospital *[2,4]	Brooklyn	A. Koplowitz	OB	2,913	.....	1,766	.....	2	7/1	1-2	100.00
Brooklyn Hospital *[2,4]	Brooklyn	J. T. Wallace	OBG	1,538	523	3,158	1,423	2	7/1	1-2	25.00
Brooklyn Women's Hospital [1]	Brooklyn	A. Koplowitz	OBG†	1,698	1,286	240	752	2	1/1	1	125.00
Cumberland Hospital *[1,4]	Brooklyn	S. Lubin	OB	971	.....	3,316	.....	1	7/1	1	70.00
		S. Lubin	Gyn†	.....	254	.....	876	1	7/1	1	70.00
Greenpoint Hospital *[1,4]	Brooklyn	W. C. Meagher	OBG	926	593	3,952	2,886	3	7/1	1	120.00
Jewish Hospital *[3,4]	Brooklyn	....	OBG	5,306	1,303	4,570	2,005	6	....	1+	30.00
Kings County Hospital *[3]	Brooklyn	C. Gordon and R. Garlick	OBG	3,549	3,253	13,037	4,011	4	7/1	1	120.00
Long Island College Hospital *[3,4]	Brooklyn	W. A. Jewett	OBG	1,873	1,012	5,520	1,630	3	7/1	1-3	25.00
Methodist Hospital *[3,4]	Brooklyn	G. H. Davis	OBG	2,405		5,963		4	....	1	.....
Norwegian Lutheran Deaconesses' Home and Hospital *[1,4]	Brooklyn	B. Harris	OB	1,461	.....	.....	.....	1	....	1	.....
St. John's Hospital *[3,4]	Brooklyn	C. Duncan	OBG	754	310	.....	493	3	7/1	1	50.00
St. Mary's Hospital *[2,4]	Brooklyn	H. J. Goubeaud	OBG	1,446	565	2,831	646	2	1/21	1-2	50.00
Buffalo General Hospital *[3,4]	Buffalo	C. L. Randall	OBG	989	1,005	2,016	1,211	8	7/1	1-4	25.00
Children's Hospital [2]	Buffalo	L. A. Siegel	OB	2,215	.....	.....	.....	1	....	1	25.00
Edward J. Meyer Memorial Hospital *[3,4]	Buffalo	E. G. Winkler	OBG	702	605	2,673	1,651	4	7/1	3	100.00
Millard Fillmore Hospital *[3]	Buffalo	L. F. McLean	OB	3,451	.....	.....	.....	2	7/1	1-4	50.00
Queens General Hospital *[2,4]			Gyn†	.....	1,394	.....	.....	2	7/1	1	50.00
	Jamaica, N. Y.		OBG	1,627	1,023	5,028	1,906	2	....	3	70.00
Bellevue Hospital, Div. III—N. Y. Univ. *[3,4]	New York City		OBG	1,538	2,000	10,233	5,500	13	7/1	1	45.00
Beth Israel Hospital *[1,4]	New York City		OB†	2,663	.....	2,091	.....	3	7/1	1-3	50.00
		[illegible]	Gyn	.....	1,009	.....	3,480	2	7/1	1-3	50.00
Bronx Hospital *[1,4]	New York City	M. Rosensohn	OB†	2,755	.....	1,908	.....	2	7/1	1-3	75.00
Flower and Fifth Avenue Hospitals *[3,4]	New York City	L. S. Loizeaux	OBG	1,765	1,258	3,736	.....	2	7/1	1	.....
Fordham Hospital *[1,4]	New York City	A. C. Butts	OB	905	.....	.....	.....	1	7/1	1	120.00
French Hospital *[2,4]	New York City	H. O. Williamson	OB	1,876	.....	4,876	.....	1	....	1	.....
Harlem Hospital *[3,4]	New York City	F. A. Kassebohn	OB	2,967	.....	16,789	.....	3	1/1, 7/1	1	.....
		H. C. Falk	Gyn	.....	2,054	.....	7,740	3	4/1, 7/1	1	70.00

Numerical and other references will be found on page 1375.

12. OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [6]		Outpatients Visits		Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
				OB	Gyn	OB	Gyn				
Lenox Hill Hospital ★[2,4]	New York City	R. C. Van Etten and R. L. McCready	OB(G)†	1,362	680	.....	7,426	3	7/1	1+	50.00
Lincoln Hospital ★[2,4]	New York City	H. C. Ingraham	OBG	1,639	887	8,511	2,459	6	1/1, 7/1	2	70.00
Lying-In Hospital	New York City		OBG	(See New York Hospital)							
Metropolitan Hospital ★[2,4]	New York City	H. B. Safford	OBG	1,110	805	6,016	3,537	4	7/1	1	50.00
Morrisania City Hospital ★[2,4]	New York City	M. Goodfriend	OB	1,145	.....	5,591	.....	2	7/1	1	70.00
Mount Sinai Hospital ★[2,4]	New York City		Gyn	.....	.....	.....	.....	5	1/1, 7/1	1+	50.00
New York City Hospital ★[2,4]	New York City	K. Johnson and J. V. Ricci	OBG	870	791	6,117	2,610	4	7/1	1-3	70.00
New York Hospital ★[3,4]	New York City	H. J. Stander	OBG	6,105		19,827	11,693	12	7/1	1-5	12.50
New York Infirmary ★[2,4]	New York City	W. Ragland	OB	989	.....	3,872	.....	2	1/1	1	75.00
New York Polyclinic Medical School and and Hospital ★[2]	New York City	E. H. Denner	OB	1,217	.....	2,635	.....	1	....	2	.....
		D. N. Barrows	Gyn	.....	953	.....	2,951	1	7/1	2	25.00
New York Post-Graduate Medical School and Hospital ★[2,4]	New York City	W. T. Dannreuther	Gyn	.....	579	.....	11,809	2	10/1	2	30.00
Presbyterian Hospital ★[3,4]	New York City	H. C. Taylor Jr.	OBG	3,623	1,458	17,287	11,764	12	....	1-3	41.66
Roosevelt Hospital ★[2,4]	New York City	T. C. Peightal	Gyn	.....	899	.....	2,652	2	....	1-2	.....
St. Clare's Hospital ★[2,4]	New York City	E. J. Davin	OBG†	1,535	502	2,842	2,617	1	1/1	2	25.00
St. Vincent's Hospital ★[2,4]	New York City	J. F. McGrath	OBG	1,913	969	4,114	1,910	2	7/1	1-3	50.00
Sloane Hospital for Women [3]	New York City			(See Presbyterian Hospital)							
Woman's Hospital [3,4]	New York City	A. H. Aldridge	OBG	2,640	2,090	8,114	17,939	12	1/1, 4/1	1-2	10.00
Genesee Hospital ★[1]	Rochester, N. Y.	S. R. Snow	OB†	1,011	.....	685	.....	1	....	1	.....
Highland Hospital ★[1,4]	Rochester, N. Y.	J. B. Loder	OB	1,500	.....	273	.....	1	7/1	1-2	100.00
Rochester General Hospital ★[3,4]	Rochester, N. Y.	MacN. Wilkinson	OB	2,430	.....	952	.....	1	7/1	1-3	85.00
Strong Memorial and Rochester Municipal Hospitals ★[3,4]	Rochester, N. Y.	K. M. Wilson	OBG	1,733	1,343	2,718	3,242	4	7/1	1-4	41.66
General Hospital ★[1]	Syracuse, N. Y.	R. J. Pieri	OB(G)†	1,449	199	1,057	219	2	7/1	1	50.00
Syracuse Memorial Hospital ★[3]	Syracuse, N. Y.	E. C. Hughes	OB	1,993	.....	.....	.....	4	7/1	1-2	.....
		C. E. Clark	Gyn	.....	1,148	.....	.....	3	7/1	1-2	.....
Charlotte Memorial Hospital ★[1,4]	Charlotte, N. C.	E. W. Franklin Jr.	OBG	1,085	758	2,660	.....	1	7/1	1	75.00
Duke Hospital ★[3,4]	Durham, N. C.	B. Carter	OBG	1,795	1,073	10,336	15,957	6	7/1	1	83.33
Watts Hospital ★[1]	Durham, N. C.	E. B. Easley	OBG†	1,078	827	604	100	1	7/1	1	75.00
James Walker Memorial Hospital ★[1]	Wilmington, N. C.		OB†	2,417	.....	.....	.....	1	12/1	1	100.00
North Carolina Baptist Hospital ★[3,4]	Winston-Salem, N. C.	F. R. Lock	OBG	1,376	537	1,049	1,661	5	....	1-3	.....
City Hospital ★[1]	Akron, Ohio		OBG	3,924	1,471	.....	.....	4	....	1	100.00
Peoples Hospital ★[1,4]	Akron, Ohio	L. L. Bottsford	OB†	2,691	.....	139	.....	2	2/1	1-2	150.00
St. Thomas Hospital ★[1]	Akron, Ohio	H. H. Gibson	OB†	1,970	.....	208	.....	1	....	1	.....
Aultman Hospital ★[1,4]	Canton, Ohio	J. Scott	OBG†	2,731	681	.....	.....	6	7/1	1-4	75.00
Mercy Hospital ★[1]	Canton, Ohio	L. E. Leavenworth	OBG	1,876	419	.....	.....	6	1/1, 7/1	1-3	100.00
Bethesda Hospital ★[1,4]	Cincinnati	D. J. Davies and R. Eddy	OBG†	2,531	923	.....	55	3	1/1, 7/1	2-3	150.00
Cincinnati General Hospital ★[3,4]	Cincinnati	H. L. Woodward	OB	2,598	.....	3,459	.....	4	7/1	1-2	.....
City Hospital ★[3,4]	Cleveland	A. A. Bill	OB	1,345	.....	1,810	.....	4	7/1	1-4	60.00
Fairview Park Hospital ★[1]	Cleveland	E. D. Saunders	OB	2,312	.....	30	.....	2	7/1	1	125.00
Lutheran Hospital ★[1,1]	Cleveland	R. S. Dial	OB	1,382	.....	.....	.....	1	7/1	1-2	125.00
Mount Sinai Hospital ★[3,4]	Cleveland	J. L. Bubis	OB	1,686	.....	264	.....	1	7/1	1	100.00
		J. L. Bubis	Gyn†	.....	735	.....	407	1	7/1	1	100.00
St. Ann's Maternity Hospital [1]	Cleveland	J. R. Thompson	OB	2,027	.....	891	.....	3	....	1	100.00
St. John's Hospital ★[1]	Cleveland	C. A. O'Connell	OB†	1,679	.....	441	.....	2	7/1	3	100.00
St. Luke's Hospital ★[3]	Cleveland	C. T. Hemmings	OBG	2,356	855	1,558	1,450	4	6/25	4	60.00
University Hospitals ★[3,4]	Cleveland	A. H. Bill	OB	4,131	.....	16,141	.....	5	7/1	1+	.....
		A. H. Bill	Gyn	.....	1,657	.....	5,335	5	7/1	1+	25.00
St. Ann's Maternity Hospital [1]	Columbus, Ohio	R. E. Krigbaum	OB†	1,195	.....	.....	.....	1	....	1	.....
Starling-Loving University Hospital ★[3,4]	Columbus, Ohio	P. J. Reel	OBG	1,467	654	4,214	1,691	3	7/1	1-3	50.00
White Cross Hospital ★[2,4]	Columbus, Ohio	W. D. Inglis	OB	2,531	.....	.....	.....	2	1/1	1-2	100.00
Miami Valley Hospital ★[1]	Dayton, Ohio	J. K. Hoerner	OB†	2,895	.....	1,296	.....	1	7/1	1-3	75.00
Huron Road Hospital ★[2,4]	East Cleveland, Ohio	A. G. Cummings and G. H. Irvin Jr.	OBG	2,723	1,357	20	79	5	....	1-4	80.00
Lakewood Hospital ★[1]	Lakewood, Ohio	B. Wylie	OB†	1,032	.....	.....	.....	1	7/1	1	100.00
Maumee Valley Hospital ★[1]	Toledo, Ohio	E. C. Mohr	OBG	329	291	408	271	1	7/1	1	150.00
Mercy Hospital ★[1]	Toledo, Ohio	R. C. King and J. Miller	OBG	2,299	1,061	.....	.....	1	....	1	.....
St. Vincent's Hospital ★[1,4]	Toledo, Ohio	M. W. Diethelm	OB	1,324	.....	226	.....	1	....	1	.....
Toledo Hospital ★[1,1]	Toledo, Ohio	M. D. Haag	OBG†	2,356	639	744	30	1	7/1	3	125.00
St. Elizabeth's Hospital ★[1]	Youngstown, Ohio	A. J. Brandt	OBG†	2,167	893	25	82	1	....	1	.....
University Hospitals ★[3]	Oklahoma City	J. B. Eskridge and G. Penick	OBG	923	511	3,887	3,472	3	7/1	1-3	35.00
Emanuel Hospital ★[1]	Portland, Ore.	M. M. Wilson	OBG†	4,024	1,183	.....	.....	2	1/1, 7/1	1+	75.00
Good Samaritan Hospital ★[1]	Portland, Ore.	T. W. Adams	OB†	1,642	.....	.....	.....	1	....	1	.....
Univ. of Oregon Med. School Hospitals and Clinics ★[3,4]	Portland, Ore.	H. C. Stearns	OBG	466	378	2,295	1,992	4	7/1	3	75.00
Bryn Mawr Hospital ★[1]	Bryn Mawr, Pa.	C. A. Behney and J. L. Richards	OBG†	236	143	1,115	443	1	7/1	1	100.00
George F. Geisinger Memorial Hospital ★[1]	Danville, Pa.	R. E. Nicodemus	OB	1,056	.....	7,940	.....	2	Varies	1	75.00
Episcopal Hospital ★[3,4]	Philadelphia	E. A. Schumann	OBG	2,550	771	6,639	1,385	2	....	1-2	50.00
Germantown Dispensary and Hospital ★[1]	Philadelphia	J. C. Hartman and Z. B. Newton	OB†	1,760	.....	2,972	.....	1	7/1	1-2	50.00
Graduate Hosp. of the Univ. of Penna. ★[3]	Philadelphia	R. Kimbrough	Gyn	.....	531	.....	971	1	7/1	1-2	.....
Hahnemann Hospital ★[2,4]	Philadelphia	N. F. Paxson and E. C. Hessert	OBG	2,606	1,114	6,052	2,233	2	....	1-2	.....
Hospital of the Univ. of Pennsylvania ★[3,4]	Philadelphia	F. L. Payne and C. Bachman	OBG	2,008	1,826	9,098	4,288	5	Varies	1-5	41.50
Hospital of the Women's Medical College of Pennsylvania ★[2,4]	Philadelphia		OB†	909	.....	.....	.....	1	7/1	1-2	50.00
		M. De W. Pettit	Gyn	.....	566	.....	1,127	1	7/1	1-2	50.00
Jefferson Medical College Hospital ★[3]	Philadelphia	L. C. Scheffey and N. W. Vaux	OBG	1,888	2,089	13,169	4,650	5	....	1	.....
Jewish Hospital ★[2,4]	Philadelphia		OBG†	1,664[b]	1,070[b]	.....	.....	1	....	1-2	.....
Lankenau Hospital ★[2]	Philadelphia	R. B. Wilson	OB†	918	.....	4,370	.....	1	7/1	1-3	100.00
Mount Sinai Hospital ★[2,4]	Philadelphia		OBG	1,026	579	1,722	1,104	1	6/1	1-2	50.00
Pennsylvania Hospital ★[3]	Philadelphia	C. B. Lull	OBG	3,045	1,298	13,106		6	1/1, 7/1	3	20.00
Philadelphia General Hospital ★[3,4]	Philadelphia		OBG	2,034	1,214	.....	.....	3	....	1-3	70.00
Temple University Hospital ★[3,4]	Philadelphia	J. R. Willson	OBG	1,901	791	4,015	1,765	4	7/1	3	50.00
Woman's Hospital ★[1,4]	Philadelphia		OB	1,432	.....	.....	.....	1	7/1, 11/1	1	100.00
			Gyn	.....	571	.....	.....	1	7/1, 11/1	1	100.00
Women's Homeopathic Hospital ★[1]	Philadelphia	W. Mercer and I. Rigberg	OBG†	690	358	2,307	657	1	10/1	1	150.00
Elizabeth Steel Magee Hospital [3,4]	Pittsburgh	C. J. Barone and B. Z. Cashman	OBG	4,165	2,283	2,683	1,044	6	7/1	3	41.67
Montefiore Hospital ★[1]	Pittsburgh	C. J. Barone and S. Goldstein	OBG	896	574	703	811	1	....	1	.....

Numerical and other references will be found on page 1375.

12. OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [6] OB	Inpatients Treated [6] Gyn	Outpatients Visits OB	Outpatients Visits Gyn	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
St. Francis Hospital ★[3,4]	Pittsburgh	J. H. Carroll	OB	1,615	.....	257	.....	2	....	3	100.00
		B. Z. Cashman	Gyn	.....	734	.....	654	2	....	3	100.00
St. Margaret Memorial Hospital ★[1]	Pittsburgh	P. Titus	OBG†	416	348	200	150	1	7/1	1	100.00
Reading Hospital ★[1,4]	Reading, Pa.	H. Muhlenberg and F. B. Nugent	OBG†	1,508	741	346	221	1	7/1	1	125.00
Providence Lying-In Hospital [1]	Providence, R. I.	A. L. Potter	OB†	1,745	.....	9,624	.....	2	2/1	1	125.00
Roper Hospital ★[3,4]	Charleston, S. C.	L. A. Wilson and F. G. Cain	OBG	1,756	585	5,074	2,511	6	7/1	1-4	25.00
Baroness Erlanger Hospital ★[1,4]	Chattanooga, Tenn.	E. F. Buchner	OB	3,412	.....	4,568	.....	4	7/1	1	75.00
John Gaston Hospital ★[3]	Memphis, Tenn.	F. E. Whitacre	OB	2,050	.....	7,401	.....	2	7/1	1	22.50
		F. E. Whitacre	Gyn	.....	843	.....	5,670	3	7/1	1	22.50
Methodist Hospital ★[1,4]	Memphis, Tenn.	....	OB†	2,421	.....	.....	.....	1	....	1	.....
St. Joseph Hospital ★[1]	Memphis, Tenn.	M. J. Roach	OBG†	1,828	1,207	950	410	1	7/1	1	.....
George W. Hubbard Hospital of Meharry Medical College ★[2]	Nashville, Tenn.	R. S. Duke	OBG	489	265	561	1,932	1	7/1	1	75.00
Nashville General Hospital ★[1]	Nashville, Tenn.	L. F. Coxe	OBG	1,009	603	6,647	6,700	5	7/1	1	.....
Vanderbilt University Hospital ★[3,4]	Nashville, Tenn.	G. S. McClellan	OBG	1,838	563	7,448	6,441	5	7/1	1	.....
Baylor University Hospital ★[3,4]	Dallas, Texas	W. K. Strother Jr.	OBG	4,717	1,070	.....	.....	3	7/1	1-3	50.00
Parkland Hospital ★[3,4]	Dallas, Texas	W. Mengert	OBG	.....	.....	.....	.....	5	....	1	50.00
Hotel Dieu, Sisters Hospital (St. Joseph's Maternity Hospital) [1]	El Paso, Texas	E. C. Bernell	OBG†	944	146	6,482	1,114	1	1/1	1	150.00
Harris Memorial Methodist Hospital ★[1,4]	Fort Worth, Texas	R. L. Grogan	OBG†	2,980	1,181	1,152	1,278	2	7/1	1-3	100.00
John Sealy Hospital ★[3,4]	Galveston, Texas	W. R. Cooke	OBG	910	716	10,424		4	....	1-3	50.00
Hermann Hospital ★[3,4]	Houston, Texas	A. L. Dippel and E. W. Bertner	OBG	1,259	1,123	4,435	2,250	3	7/1	1-3	50.00
Jefferson Davis Hospital ★[2,4]	Houston, Texas	J. Z. Gaston and C. Hamilton	OBG†	1,426[b]	866[b]	4,856[b]	3,114[b]	2	7/1	1	50.00
Memorial Hospital [2]	Houston, Texas	....	OBG	2,085	.....	.....	.....	2	....	1	.....
Methodist Hospital ★[2,4]	Houston, Texas	D. V. Wachsman and J. A. Wall	OB(G)†	875	511	1,882	82	3	7/1	1-3	75.00
St. Joseph's Infirmary [2]	Houston, Texas	A. M. Faris	OB	5,385	.....	870	.....	3	....	1-2	.....
Thomas D. Dee Memorial Hospital ★[1]	Ogden, Utah	V. L. Ward	OB†	2,630	.....	387	.....	2	....	1	.....
Dr. W. H. Groves Latter-Day Saints Hospital ★[3]	Salt Lake City	W. M. Nebeker	OBG†	4,535		.....	.....	3	7/1	1-3	100.00
Holy Cross Hospital ★[1,4]	Salt Lake City	J. R. Wherritt	OB†	1,921	.....	.....	.....	1	7/1	1-3	125.00
Salt Lake County General Hospital ★[1,4]	Salt Lake City	E. G. Holmstrom	OBG	453	327	1,320	732	2	7/1	1	25.00
Mary Fletcher Hospital ★[1]	Burlington, Vt.	H. A. Durfee	OBG†	900	480	421	279	2	Varies	1	.....
Alexandria Hospital ★[1,4]	Alexandria, Va.	H. Picot	OBG†	1,604	570	.....	.....	2	7/1	1-2	125.00
University of Virginia Hospital ★[3,4]	Charlottesville, Va.	T. J. Williams	OBG	1,006		7,581		4	7/1	1-4	62.00
DePaul Hospital ★[1,4]	Norfolk, Va.	J. R. Kight	OBG	2,001	991	116	155	1	....	1	.....
Norfolk General Hospital ★[1,4]	Norfolk, Va.	C. J. Andrews	OB†	1,518	.....	267	.....	1	7/1	1	75.00
Medical College of Virginia, Hosp. Div. ★[3,4]	Richmond, Va.	H. H. Ware Jr.	OB	3,769	.....	7,280	.....	3	7/1	1	46.50
Providence Hospital ★[1]	Seattle	E. B. Brookbank	OB	2,526	.....	301	.....	1	7/1	1	100.00
Swedish Hospital ★[1]	Seattle	W. W. Bell	OBG†	.....	1,329	.....	.....	1	....	1	.....
Virginia Mason Hospital ★[1]	Seattle	....	OBG†	1,447	493	.....	.....	1	....	1	75.00
Northern Permanente Foundation ★[1]	Vancouver, Wash.	D. G. Wiley	OBG	601[b]	1,152[b]	6,283[b]	10,769[b]	1	....	1	.....
St. Mary's Hospital ★[1,4]	Huntington, W. Va.	J. R. Bloss	OB	1,523	.....	512	.....	1	7/1	1	100.00
State of Wisconsin General Hospital ★[3,4]	Madison, Wis.	J. W. Harris	OBG	355	703	7,715		4	7/1	3	25.00
Milwaukee County Hospital ★[3,4]	Milwaukee	R. S. Cron	OBG	320	414	916	924	2	Varies	1-3	75.00
Milwaukee Hospital ★[3]	Milwaukee	H. W. Shutter and R. S. Cron	OBG†	1,097	863	.....	.....	2	....	3	70.00
St. Joseph's Hospital ★[3]	Milwaukee	H. J. Olson	OB	3,522	.....	.....	.....	2	....	1-3	75.00
Kapiolani Maternity and Gynecological Hospital [1]	Honolulu, Hawaii	L. G. Phillips	OB	3,170	.....	.....	.....	2	7/1	1	150.00

Hospitals, 292; Assistant Residencies and Residencies, 963

13. OCCUPATIONAL MEDICINE

Approval of residencies in Occupational Medicine has been authorized by the American Medical Association. Institutions desiring residency approval in this field should make application to the Council on Medical Education and Hospitals, 535 N. Dearborn Street, Chicago 10, Illinois.

14. OPHTHALMOLOGY AND OTOLARYNGOLOGY

United States Army.— U. S. Army.
Letterman General -ancisco
Fitzsimons General

William Beaumont General Hospital ★(Otol).....El Paso, Texas
†Brooke General Hospital ★(Otol).................San Antonio, Texas

United States Navy S. Navy.
†U. S. Naval
†U. S. Naval E

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [6] Oph	Inpatients Treated [6] Otol	Outpatient Visits Oph	Outpatient Visits Otol	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Jefferson and Hillman Hospital ★	Birmingham, Ala.	G. E. Fisher	Otol	.....	813	.....	2,104	2	1/1	1+	$ 50.00
†Baptist State Hospital ★	Little Rock, Ark.	K. W. Cosgrove	Otol	.....	1,245	.....	1,056	3	Varies	3	.....
Children's Hospital	Los Angeles	J. M. Brown	Otol	.....	966	.....	2,080	1	....	1	.....
Los Angeles County Hospital ★[4]	Los Angeles	W. J. Endres	Oph	845	.....	9,451	.....	2	Varies	2	157.20
		P. Viole	Otol	.....	1,912	.....	6,593	2	Varies	2	157.20
White Memorial Hospital ★	Los Angeles	W. A. Boyce	Oph	168	.....	7,472	.....	1	....	1	120.00
		B. N. Colver	Otol	.....	1,049	.....	9,354	2	....	1-3	120.00
San Diego County General Hospital ★	San Diego, Calif.	M. P. Kope and C. W. Brown	OpOt	517		1,811	1,202	2	7/1	1	215.00
Children's Hospital ★[4]	San Francisco	R. C. Martin	OpOt	1,070		1,846		1	7/1	1-2	50.00
Green's Eye Hospital	San Francisco	V. V. Suglian	Oph	975	.....	60,241	.....	4	7/1	1-3	50.00
		L. Z. Fishman	Otol	.....	392	.....	10,375	1	7/1	1-3	50.00
San Francisco Hospital ★[4]	San Francisco	....	OpOt	483		.....		1	....	1	100.00
Stanford University Hospitals ★[4]	San Francisco	H. Barkan	Oph	712	.....	7,282	.....	3	7/1	1-2	50.00
		R. C. McNaught	Otol	.....	822	.....	7,694	2	7/1	1-2	50.00
University of California Hospital ★[4]	San Francisco	F. C. Cordes	Oph	271	.....	9,074	.....	5	....	1	50.00
		L. F. Morrison	Otol	.....	478	.....	5,005	3	7/1	1	50.00
Colorado General Hospital ★[4]	Denver	W. M. Bane	Oph	113	.....	6,757	.....	2	9/1	1-2	85.00
		F. R. Spencer	Otol	.....	271	.....	3,394	1	1/1	1	85.00

Numerical and other references will be found on page 1375.

14. OPHTHALMOLOGY AND OTOLARYNGOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [6]		Outpatient Visits		Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
				Oph	Otol	Oph	Otol				
Grace-New Haven Community Hospital New Haven Unit ★[4]	New Haven, Conn.	N. Canfield	Otol	.....	786	.....	5,321	2	7/1	1	40.00
†Hospital of St. Raphael ★	New Haven, Conn.	C. T. Flynn	Otol	.....	1,206	.....	164	1	7/1	1	75.00
Episcopal Eye, Ear and Throat Hospital [4]	Washington, D. C.	J. N. Greear	Oph	1,465[b]	.....	18,092[b]	.....	4	1/1	2	25.00
		A. M. Zinkhan	Otol	.....	5,244[b]	.....	9,402[b]	4	1/1	2	25.00
Gallinger Municipal Hospital ★[4]	Washington, D. C.	E. Cummings and S. Burtoff	OpOt	343		4,157		2	7/1	1-3	75.00
Grady Memorial Hospital ★[4]	Atlanta, Ga.	A. V. Hallum and W. Warren	OpOt	351	1,034	8,755	8,941	7	7/1	1	20.00
†Veterans Administration Hospital	Chamblee, Ga.	....	Otol	.....	88	.....	185	1	7/1	1-3	275.00
Cook County Hospital ★[4]	Chicago	J. Lebersohn	Oph	863	.....	14,212	.....	7	Varies	1-3	27.50
		J. Lifschutz	Otol	.....	2,023	.....	17,522	3	Varies	1-3	27.50
Illinois Eye and Ear Infirmary [4]	Chicago	P. C. Kronfeld	Oph	2,081	.....	49,524	.....	15	1/1	1½	None
		P. C. Kronfeld	Otol	.....	1,867	.....	24,761	8	1/1	1	None
Mercy Hospital-Loyola University Clinics ★	Chicago	L. G. Hoffman	OpOt	110	1,030	857	971	1	....	1-2	25.00
Michael Reese Hospital ★[4]	Chicago	S. J. Meyer	Oph	526	.....	3,037	.....	2	....	1	25.00
		W. Smiley	Otol	.....	2,040	.....	1,461	1	....	1	25.00
Passavant Memorial Hospital ★[4]	Chicago	D. Vail	Oph	219	.....	436	.....	2	....	1	None
		J. F. Delph	Otol	.....	178	.....	1,164	1	....	1	None
Presbyterian Hospital ★	Chicago	E. V. L. Brown	Oph	308	.....	4,836	.....	1	7/1	1-2	25.00
		S. A. Friedberg	Otol	.....	830	.....	3,605	2	7/1	1-2	25.00
Provident Hospital ★[4]	Chicago	C. L. Forney	OpOt	.....	407	4,914	1,395	1	....	1	.....
Research and Educational Hospitals ★	Chicago	H. Beard	Oph	257	.....	5,863	.....	1	7/1	1-2	55.00
		F. E. Lederer	Otol	.....	519	.....	6,895	2	7/1	1-2	55.00
†St. Joseph Hospital ★[4]	Chicago	J. M. Donegan	Oph	42	.....	750	.....	1	7/1	1	75.00
St. Luke's Hospital ★[4]	Chicago	R. C. Gamble and W. H. Theobald	OpOt	.....	786	914	1,170	2	7/1	1-3	25.00
University of Chicago Clinics ★	Chicago	A. Krause	Oph	146	.....	7,966	.....	4	7/1	1-4	25.00
		J. R. Lindsay	Otol	.....	427	.....	10,529	2	7/1	1-2	25.00
Wesley Memorial Hospital ★[4]	Chicago	W. A. Mann	Oph	329	.....	.....	.....	2	1/1, 7/1	1-3	25.00
		T. P. O'Connor	Otol†	.....	1,374	.....	.....	1	Quarterly	1-3	25.00
†Veterans Administration Hospital	Hines, Ill.	W. A. Mann	Oph	391	.....	3,393	.....	2	7/1	1-3	303.00
			Otol	.....	612	.....	3,231	2	7/1	..	303.00
Indianapolis City Hospital ★	Indianapolis	B. J. Larkin	Oph	207	.....	5,265	.....	2	....	1-2	.....
		R. Dearmin	Otol	.....	649	.....	3,876	2	....	1-2	.....
Indiana University Medical Center ★[4]	Indianapolis	R. M. Masters	Oph	200	.....	2,397	.....	5	....	1	33.33
		C. H. McCaskey	Otol	.....	440	.....	1,623	3	....	1	33.33
University Hospitals ★[4]	Iowa City	C. S. O'Brien	Oph	1,206	.....	4,884	.....	8	7/1	1	40.00
		D. M. Lierle	Otol	.....	2,103	.....	2,864	6	7/1	1	40.00
University of Kansas Hospitals ★[4]	Kansas City, Kan.	S. E. Roberts	Otol	.....	863	.....	2,267	1	....	1	.....
†Veterans Administration Hospital	Topeka, Kan.	L. S. Powell	Otol	.....	171	.....	370	2	Varies	1	345.80
Louisville General Hospital ★	Louisville, Ky.	D. Townes	OpOt	181	247	4,546	3,103	3	4/1	1-2	45.00
Charity Hospital of Louisiana ★[4]	New Orleans	....	OpOt	1,351	2,710	12,677	15,260	13	7/1	1-3	25.00
Eye, Ear, Nose and Throat Hospital [4]	New Orleans	W. R. Buffington	Oph	1,898	.....	16,378	.....	6	7/1	1	.....
		F. E. LeJeune	Otol	.....	3,980	.....	21,279	6	7/1	1	.....
Touro Infirmary ★	New Orleans	E. E. Allgeyer and D. Womack	OpOt	51	1,039	1,470	1,451	1	7/1	1	17.50
†U. S. Marine Hospital ★	New Orleans	L. M. Smith	Otol	.....	407	.....	1,113	1	Varies	1-2	199.50
†Veterans Administration Hospital	New Orleans	....	Otol	.....	512	.....	332	2	Varies	1-3	275.00
Baltimore Eye, Ear and Throat Charity Hospital [4]	Baltimore	....	OpOt	4,116		11,409	6,890	4	1/1, 7/1	1-2	10.00
Johns Hopkins Hospital ★[4]	Baltimore	A. C. Woods	Oph	1,573	.....	16,008	.....	6	7/1	1+	.....
		S. J. Crowe	Otol	.....	1,247	.....	12,876	4	7/1	1+	.....
†South Baltimore General Hospital ★	Baltimore	S. L. Fox	Otol	.....	896	.....	1,074	2	7/1	1-2	90.00
University Hospital ★[4]	Baltimore	C. Clapp and E. A. Looper	OpOt	14	836	4,177	1,834	1	7/1	1-2	.....
Beth Israel Hospital ★	Boston	G. B. Fred	Otol	.....	590	.....	2,210	1	10/1	1	41.66
Boston City Hospital ★[4]	Boston	J. J. Regan and E. J. Monahan	OpOt	517	1,610	14,174	10,241	2	....	1-2	50.00
Lahey Clinic	Boston	W. B. Hoover	Otol	.....	825[b]	.....	10,000[b]	2	....	1-3	.....
Massachusetts Eye and Ear Infirmary [4]	Boston	E. B. Dunphy	Oph	3,032	.....	39,070	.....	8	Varies	2+	.....
		L. A. Schall	Otol	.....	3,244	.....	28,862	8	Varies	2+	.....
†Massachusetts Memorial Hospital ★[4]	Boston	L. F. Johnson	Otol	.....	.....	.....	2,072	1	....	1	50.00
Memorial Hospital ★[4]	Worcester, Mass.	G. Berry	Otol	.....	1,713	.....	813	1	....	1-2	100.00
University Hospital ★[4]	Ann Arbor, Mich.	F. B. Fralick	Oph	526	.....	11,795	.....	6	Varies	1-2	101.40
		A. C. Furstenberg	Otol	.....	755	.....	8,712	6	Varies	1-2	101.40
City of Detroit Receiving Hospital ★[4]	Detroit	P. Heath and J. M. Robb	OpOt	949		7,842		2	7/15	1+	149.67
Grace Hospital ★	Detroit	R. S. Goux	OpOt	1,749		1,230	830	2	7/1	1-3	75.00
Harper Hospital ★[4]	Detroit	J. M. Robb	OpOt	983[b]	3,119[b]	.....	.....	6	....	1	113.00
Henry Ford Hospital ★[4]	Detroit	E. J. Whitney	Oph	351	.....	16,020	.....	4	7/1	1-3	200.00
		J. L. Dill	Otol	.....	1,228	.....	16,555	3	7/1	1-3	200.00
Wayne County General Hosp. and Inf. ★[4]	Eloise, Mich.	F. L. Ryerson	OpOt	421		2,178		2	7/1	1	197.50
Minneapolis General Hospital ★[4]	Minneapolis	W. K. Haven and R. E. Priest	OpOt	240		2,660	1,759	2	1/1, 7/1	1-3	100.00
University Hospitals ★[4]	Minneapolis	E. Hansen	Oph	242	.....	4,672	.....	6	....	1	.....
		L. R. Boies	Otol	.....	382	.....	1,676	3	7/1	1-3	100.00
†Veterans Administration Hospital (Fort Snelling)	Minneapolis	H. V. Hanson	Otol	.....	334	.....	.....	2	Varies	1	200.00
Mayo Foundation	Rochester, Minn.	W. L. Benedict	Oph	.....	.....	.....	.....	8	....	1	.....
		H. I. Lillie	Otol	(See page 1375)				10	....	1	.....
Ancker Hospital ★	St. Paul	L. T. Simons	OpOt	90	251	2,371	1,426	2	Varies	1-3	91.50
Charles T. Miller Hospital ★	St. Paul	F. Burch	Oph	830	.....	3,889	.....	2	1/1	1-3	100.00
Children's Mercy Hospital	Kansas City, Mo.	A. J. Baer and E. Lacy	OpOt	44	432	390	1,522	1	....	1	.....
Kansas City General Hospital No. 1 ★	Kansas City, Mo.	A. W. McAlester and R. H. Underwood	OpOt	122	203	2,519	2,523	2	7/1	1-2	50.00
Barnes Hospital ★[4]	St. Louis	L. T. Post	Oph	1,230	.....	14,561	.....	6	7/1	2½	10.00
		T. E. Walsh	Otol	.....	2,398	.....	12,407	7	7/1	1-2	25.00
Homer G. Phillips Hospital ★	St. Louis	L. T. Post	OpOt	143	280	2,210	2,347	3	7/1	1	50.00
Jewish Hospital ★[4]	St. Louis	S. B. Westlake	Otol	.....	346	.....	.....	1	....	1	50.00
St. Louis City Hospital ★[4]	St. Louis	L. T. Post	Oph	105	.....	2,341	.....	2	7/1	2½	80.00
			Otol	.....	387	.....	1,929	1	7/1	2½	80.00
St. Mary's Group of Hospitals ★	St. Louis	W. H. Luedde	Oph	216	.....	7,552	.....	3	Varies	3	35.00
		B. J. McMahon	Otol	.....	760	.....	4,515	4	Varies	3	35.00
University of Nebraska Hospital ★[4]	Omaha	J. H. Judd	Oph	117	.....	1,195	.....	1	7/1	1-3	50.00
Jersey City Hospital ★[4]	Jersey City, N. J.	F. X. Brophy and M. G. Borrone	OpOt	421	1,620	3,555	5,094	5	Varies	1-2	35.00
Newark City Hospital ★	Newark, N. J.	....	Otol	.....	.....	.....	.....	1	....	1	.....
Newark Eye and Ear Infirmary	Newark, N. J.	R. H. Rogers and W. M. Brien	OpOt	871	181	5,347	2,327	2	Varies	1	.....

Numerical and other references will be found on page 1375.

14. OPHTHALMOLOGY AND OTOLARYNGOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [8]		Outpatient Visits		Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
				Oph	Otol	Oph	Otol				
Albany Hospital ★[4]	Albany, N. Y.	H. K. Tebbutt Jr.	Otol	.....	956	.....	.....	2	7/1	1	41.67
Brooklyn Eye and Ear Hospital	Brooklyn	W. V. Moore	Oph	1,653	.....	43,103	.....	9	Varies	2	.....
		G. R. O'Brien	Otol	.....	2,762	.....	37,775	4	Varies	2	.....
Jewish Hospital ★[4]	Brooklyn	E. L. Berger	Otol	.....	296	.....	3,681	1	....	1	30.00
Kings County Hospital ★	Brooklyn	W. Moehle	Oph	315	.....	8,418	.....	2	7/1	1-2	.....
		M. C. Myerson	Otol	.....	1,732	.....	3,575	2	7/1	1-2	70.00
Long Island College Hospital ★[4]	Brooklyn	J. N. Evans	Oph	253	.....	4,200	.....	5	7/1	4	25.00
		C. R. Weeth	Otol	.....	456	.....	1,601	2	7/1	1-3	25.00
Buffalo General Hospital ★	Buffalo	C. Cott	Otol	.....	801	.....	930	3	7/1	1-3	25.00
Edward J. Meyer Memorial Hospital ★[4]	Buffalo	I. J. Koenig	Oph	82	.....	2,002	.....	4	7/1	3	100.00
		H. E. Bozer	Otol	.....	80	.....	1,547	1	7/1	3	100.00
Queens General Hospital ★[4]	Jamaica, N. Y.	W. G. Frey	Oph	169	.....	2,805	.....	1	....	1-2	70.00
		M. S. Bender	Otol	.....	845	.....	3,391	3	....	1-2	70.00
New Rochelle Hospital ★	New Rochelle, N. Y.	A. L. Beck	OpOt	1,885		770	691	2	7/1	1-3	100.00
Bellevue Hospital, Div. III—N. Y. Univ. ★[4]	New York City	D. B. Kirby	Oph	431	.....	11,558	.....	6	Varies	1+	45.00
		J. F. Daly	Otol	.....	2,823	.....	13,191	6	Varies	1-2	45.00
†Beth Israel Hospital ★	New York City	M. L. Som and S. Stein	Otol	.....	434	.....	2,467	1	4/1	1	50.00
†Bronx Eye and Ear Infirmary	New York City	W. M. Dunning	Otol	.....	2,046	.....	14,449	1	7/1	1	50.00
Flower and Fifth Avenue Hospitals ★[4]	New York City	J. A. W. Hetrick	Otol	.....	300	.....	2,200	2	7/1	1	.....
Goldwater Memorial Hospital ★[4]	New York City	J. W. Smith	Oph	1,660	.....	2,058	.....	3	7/1	1-2	50.00
Harlem Eye and Ear Hospital	New York City	C. B. Meding and E. Grabscheid	OpOt	481	1,870	15,679	17,636	3	....	1	.....
Harlem Hospital ★[4]	New York City	H. J. Burman	Otol	.....	700	.....	4,918	1	7/1	1	70.00
Institute of Ophthalmology	New York City	....		(Unit of Presbyterian Hospital)							
Lenox Hill Hospital ★[4]	New York City	J. J. Reid	Oph	295	.....	5,195	.....	1	7/1	1½	50.00
		G. F. Oberrender	Otol†	.....	1,351	.....	973	1	1/1	1-2	50.00
Manhattan Eye, Ear and Throat Hospital[4]	New York City	....	Oph	2,432	.....	68,561	.....	10	Varies	2½	.....
			Otol	.....	7,868	.....	51,875	8	Varies	2	.....
Metropolitan Hospital ★[4]	New York City	C. A. Turtz	Oph	53	.....	2,914	.....	1	7/1	1	.....
		J. A. W. Hetrick	Otol	.....	480	.....	3,161	1	1/1	1	100.00
†Morrisania City Hospital ★	New York City	C. H. Smith	Otol	.....	865	.....	2,906	1	7/1	1	120.00
Mount Sinai Hospital ★[4]	New York City	....	Oph	.....	.....	.....	.....	4	1/1, 7/1	1-2	50.00
			Otol	.....	.....	.....	.....	3	1/1, 7/1	1-2	50.00
New York City Hospital ★[4]	New York City	H. B. Judd	Otol	.....	470	.....	3,799	1	7/1	1	120.00
New York Eye and Ear Infirmary[4]	New York City	C. Berens	Oph	6,695		61,482	.....	13	10/1	2+	.....
		S. Craig	Otol	.....	.....	.....	39,461	13	10/1	2+	.....
New York Polyclinic Medical School and Hospital ★	New York City	C. E. McDannald and S. J. Kopetzky	OpOt	171	1,000	3,856	7,689	4	7/1	3	25.00
New York Post-Graduate Medical School and Hospital ★	New York City	R. Aebli	Oph	296	.....	6,473	.....	3	4/1, 11/1	2	.....
		A. N. Nilsen	Otol	.....	662	.....	6,778	3	7/1, 8/1	2	.....
Presbyterian Hospital ★[4]	New York City	J. M. Dunnington	Oph	2,406	.....	26,438	.....	9	....	1-3	41.66
		J. D. Kernan	Otol	.....	2,229	.....	22,079	6	....	1-3	41.66
Roosevelt Hospital ★[4]	New York City	C. N. Harper	Otol	.....	639	.....	2,293	2	7/1	1-2	25.00
St. Luke's Hospital ★	New York City	W. G. Frey	Oph	138	.....	7,470	.....	1	Varies	1½	50.00
		J. W. Fowlkes	Otol	.....	1,132	.....	8,184	3	Varies	1-3	50.00
Rochester General Hospital ★[4]	Rochester, N. Y.	E. R. Vernon and E. J. Avery	OpOt	129	1,160	803	1,232	2	7/1	1-2	85.00
Strong Memorial-Rochester Municipal Hospitals ★[4]	Rochester, N. Y.	J. F. Gipner	Oph	350	.....	5,382	.....	2	7/1	1-2	41.66
		C. A. Heatly	Otol	.....	1,014	.....	4,390	2	7/1	1-2	41.66
Sea View Hospital[4]	Staten Island, N. Y.	J. Gilbert	Otol	.....	2,147	.....	.....	2	1/1, 7/1	1	120.00
Syracuse University Medical Center ★	Syracuse, N. Y.	G. D. Hoople	Otol	.....	500	.....	1,000	1	7/1	1-2	75.00
Grasslands Hospital ★[4]	Valhalla, N. Y.	E. C. Wood	Oph	61	.....	2,549	.....	1	7/1	1-2	.....
		M. T. Smith	Otol	.....	176	.....	1,810	1	7/1	1-2	75.00
†Charlotte Memorial Hospital ★	Charlotte, N. C.	V. K. Hart	Otol	.....	689	.....	.....	1	....	1	.....
Duke Hospital ★[4]	Durham, N. C.	W. B. Anderson and W. W. Eagle	OpOt	423	603	6,525	9,849	3	7/1	1	83.33
†North Carolina Baptist Hospital ★	Winston-Salem, N. C.	J. A. Harrill	Otol	.....	482	.....	192	1	7/1	1-3	41.66
Cincinnati General Hospital ★	Cincinnati	H. Reid	Oph	316	.....	6,459	.....	2	7/1	1-2	.....
		H. Goodyear	Otol	.....	681	.....	4,764	2	7/1	1-2	.....
City Hospital ★[4]	Cleveland	G. L. Miller	Oph	150	.....	4,302	.....	2	7/1	1-4	60.00
		C. W. Engler	Otol	.....	535	.....	2,701	2	7/1	1-4	60.00
Cleveland Clinic Foundation Hospital[4]	Cleveland	P. M. Moore	Otol	.....	690	.....	12,442	4	7/1	1-3	100 00
St. Luke's Hospital ★	Cleveland	M. W. Jacoby	Oph	269	.....	1,426	.....	1	6/25	1	90.00
		T. W. Thoburn	Otol	.....	1,924	.....	1,370	2	6/25	1-2	90.00
University Hospitals ★[4]	Cleveland	A. B. Bruner	Oph	886	.....	5,107	.....	3	7/1	1+	25.00
		C. Pitkin	Otol	.....	1,606	.....	3,876	2	7/1	1+	25.00
Starling-Loving University Hospital ★[4]	Columbus, Ohio	C. S. Perry	Oph	167	.....	1,496	.....	2	7/1	1-3	50.00
		H. G. Beatty	Otol	.....	242	.....	1,318	2	7/1	1-3	50.00
University Hospitals ★	Oklahoma City	J. P. McGee and T. G. Walls	OpOt	168	349	2,228	1,334	2	7/1	1-2	35.00
University of Oregon Medical School Hospitals and Clinics ★[4]	Portland, Ore.	K. C. Swan	Oph	242	.....	9,794	.....	4	7/1	3	75.00
		G. L. Boyden	Otol	.....	587	.....	3,567	1	7/1	1	75.00
†Veterans Administration Hospital	Portland, Ore.	R. A. Fenton	Otol	.....	172	.....	.....	2	10/1	1-2	275.00
†Veterans Administration Hospital	Aspinwall, Pa.	K. Day	Otol	.....	298	.....	.....	3	1/1, 7/1	3	.....
George F. Geisinger Memorial Hospital ★[4]	Danville, Pa.	C. H. Jacobs	Oph	212	.....	4,252	.....	1	7/1	1	75.00
		F. W. Davison	Otol	.....	958	.....	8,738	1	7/1	1	75.00
Episcopal Hospital ★[4]	Philadelphia	O. C. Hirst and J. A. Bertolet	Otol	.....	638	.....	2,863	1	....	1	50.00
Graduate Hospital of the University of Pennsylvania ★	Philadelphia	E. Spaeth	Oph	475	.....	3,240	.....	1	7/1	1-2	.....
		E. Campbell	Otol	.....	1,364	.....	3,840	2	7/1	1-2	.....
Hosp. of the University of Pennsylvania ★[4]	Philadelphia	F. H. Adler	Oph	617	.....	6,622	.....	6	7/1	3	41.66
		H. P. Schenck	Otol†	.....	2,159	.....	4,827	3	7/1	1-3	41.66
Jefferson Medical College Hospital ★	Philadelphia	H. J. Williams and L. H. Clerf	Otol	.....	1,914	.....	10,257	3	....	1	.....
†Pennsylvania Hospital ★	Philadelphia	E. H. Campbell	Otol	.....	766	.....	3,464	1	6/1, 7/1	1-2	20.00
Philadelphia General Hospital ★[4]	Philadelphia	....	Oph	92	.....	.....	.....	1	....	1-3	70.00
Temple University Hospital ★[4]	Philadelphia	W. I. Lillie	Oph	332	.....	2,636	.....	4	7/1	3	50.00
		M. S. Ersner	Otol	.....	1,134	.....	2,530	1	7/1	3	50.00
Wills Hospital[4]	Philadelphia	F. C. Parker	Oph	4,129	.....	91,526	.....	12	Varies	1½	None
Eye, Ear, Nose and Throat Hospital[4]	Pittsburgh	J. G. Linn and J. H. McCready	OpOt	1,213	.....	4,375	.....	7	1/1	2	40.00
Mercy Hospital ★[4]	Pittsburgh	W. L. Allison	Otol	.....	1,888	.....	1,713	2	9/1	1-3	.....
Knoxville General Hospital ★	Knoxville, Tenn.	R. Leach	OpOt	351		805		1	7/1	1	60.00
†John Gaston Hospital ★	Memphis, Tenn.	W. L. Simpson	Otol	.....	1,040	.....	3,981	2	7/1	1-2	50.00
Memphis Eye, Ear, Nose and Throat Hosp.	Memphis, Tenn.	E. C. Ellett and L. Levy	OpOt	3,142		8,866		4	....	1	.....

Numerical and other references will be found on page 1375.

14. OPHTHALMOLOGY AND OTOLARYNGOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated [6] Oph	Inpatients Treated [6] Otol	Outpatient Visits Oph	Outpatient Visits Otol	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Nashville General Hospital ★[4]	Nashville, Tenn.	J. C. Chambliss	OpOt	407[b]		3,763[b]		2	....	1	.....
Vanderbilt University Hospital ★[4]	Nashville, Tenn.		Otol	.....	.....	.....	.....	1	....	1	.....
Parkland Hospital ★[4]	Dallas, Texas	J. G. Jones and J. D. Singleton	OpOt	.....	.....	.....	.....	1	....	1	50.00
†Veterans Administration Hospital	Dallas, Texas	C. D. Winborn	Otol	.....	659	.....	2,625	1	5/1	2-3	262.00
John Sealy Hospital ★[4]	Galveston, Texas	J. M. Robinson	Otol	.....	555	.....	3,923	2	....	1-3	50.00
Jefferson Davis Hospital ★[4]	Houston, Texas	E. W. Griffey	Oph	.....	.....	.....	.....	2	1/1	1	50.00
		W. Snow	Otol	.....	.....	.....	.....	1	9/1	1	50.00
University of Virginia Hospital ★[4]	Charlottesville, Va.	E. W. Burton	Oph	285	.....	3,421	.....	4	7/1	3	50.00
		F. W. Woodward	Otol	.....	1,005	.....	4,828	4	7/1	1-4	62.00
Medical College of Virginia, Hosp. Div.★	Richmond, Va.	R. H. Courtney and P. N. Pastore	OpOt	330	591	4,396	2,639	5	7/1	1	46.50
Gill Mem. Eye, Ear and Throat Hospital [4]	Roanoke, Va.	E. G. Gill	OpOt	145	1,070	6,405	6,566	4	....	1-2	150.00
King County Hospital ★	Seattle	F. Wannamaker	OpOt	598		806	834	2	7/1	1	125.00
State of Wisconsin General Hospital ★[4]	Madison, Wis.	F. A. Davis and W. M. Nesbit	OpOt	1,153		3,431		5	7/1	3	25.00
Milwaukee County Hospital ★[4]	Milwaukee	T. F. McCormick and E. A. Waldeck	OpOt	172	273	3,461	1,100	6	Varies	1-3	75.00
†Veterans Administration Hospital	Milwaukee	W. E. Grove	Otol	.....	331	.....	2,145	3	7/1	1-3	275.00

Hospitals, 149; Assistant Residencies and Residencies, 630

15. ORTHOPEDIC SURGERY

The following services are approved by the Council and the American Board of Orthopedic Surgery
(See footnotes ½ to 3 for number of years credit; also 14)

United States Army.—Residencies available to medical officers, U. S. Army.

Letterman General Hospital ★[2] (AFS)............San Francisco
Fitzsimons General Hospital ★[2] (AFS)...........Denver
Walter Reed General Hospital ★[2] (AFS). ....Washington, D. C.
Percy Jones General Hospital ★[2] (AFS)..........Battle Creek, Mich
†William Beaumont General Hospital ★[2] (AFS)....El Paso, Texas
Brooke General Hospital ★[2] (AFS)................San Antonio, Texas
Madigan General Hospital ★[2] (AFS)..............Fort Lewis, Wash.

United States Navy.—Residencies available to medical officers, U. S. Navy.

†U. S. Naval Hospital ★1½ (AF)...................Long Beach, Calif.
†U. S. Naval Hospital ★[2] (AFS)...................Oakland, Calif.
†U. S. Naval Hospital ★1½ (AF)...................San Diego, Calif.
†U. S. Naval Hospital ★1½ (AF)...................Great Lakes, Ill..
U. S. Naval Hospital ★1½ (AF)....................Bethesda, Md.
†U. S. Naval Hospital ★[2] (AFS)...................Chelsea, Mass.
†U. S. Naval Hospital ★[2] (AFS)...................St. Albans, N. Y.
U. S. Naval Hospital ★[2] (AFS)....................Philadelphia

Name of Hospital	Location	Chief of Service	Type of Training [14]	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Jefferson and Hillman Hospitals ★[3,4]	Birmingham, Ala.	J. D. Sherrill	ACFS	1,764	3,306	38	5	2	7/1	1	.....
†Employees' Hospital of the Tennessee Coal, Iron and Railroad Company ★½	Fairfield, Ala.	C. H. Wilson	F	337	4,932	4	4	1	7/1	1-3	$200.00
†City Hospital ★2½	Mobile, Ala.	W. C. Hannon	ACF	475	761	16	..	1	....	1	.....
†St. Monica's Hosp. and Health Center ★½	Phoenix, Ariz.	J. L. Smith	F	1,478	5,872	..	..	1	7/1	1	150.00
Children's Hospital [1]	Los Angeles	J. C. Wilson	C	589	2,855	3	2	2	....	1	.....
Los Angeles County Hospital ★[2,4]	Los Angeles	V. P. Thompson	AFS	4,240	25,454	191	8	5	Varies	2	157.20
Orthopaedic Hospital [3]	Los Angeles	A. Brockway	ACFS	2,279	31,986	5	2	4	....	2-3	150.00
White Memorial Hospital ★[2]	Los Angeles	G. M. Taylor	AFS	447	6,173	..	..	4	....	1-3	30.00
Highland-Alameda County Hospital ★[3,4]	Oakland, Calif.	C. B. Fowler	ACFS	560	.....	47	5	2	7/1	1-3	155.00
Samuel Merritt Hospital [2]	Oakland, Calif.	H. H. Hitchcock	AFS	1,316	.....	13	3	2	4/1, 7/1	1-2	110.00
†San Diego County General Hospital ★1½	San Diego, Calif.	F. MacPherson	AF	427	1,341	41	33	1	7/1	1	164.00
Children's Hospital ★[1,4]	San Francisco	L. C. Abbott	C	353	2,216	..	1	1	6/1	1-2	50.00
Franklin Hospital ★[1,4]	San Francisco	L. C. Abbott and F. C. Bost	A	521	.....	9	7	3	7/1	1	200.00
†St. Mary's Hospital ★½	San Francisco	V. M. Dillon	F	999	.....	14	4	1	7/1	1	100.00
San Francisco Hospital ★1½,[4]	San Francisco	F. C. Bost	AF	304	.....	6	2	2	....	1	175.00
Shriners Hospital for Crippled Children [1]	San Francisco	F. C. Bost	C	40	2,012	..	..	1	....	1+	100.00
†Stanford University Hospitals ★[1,4]	San Francisco	D. E. King	A	569	3,690	4	1	2	7/1	1-2	50.00
University of California Hospital ★[1,4]	San Francisco	L. C. Abbott	A	246	6,685	..	..	2	7/1	1	50.00
†Veterans Administration Hospital 1½	San Francisco	R. P. Watkins	AF	.....	.....	..	..	1	7/1	1	275.00
†Santa Clara County Hospital ★1½	San Jose, Calif.	J. B. Josephson	AF	.....	.....	..	..	1	....	1	185.00
†Veterans Administration Hospital [2]	Van Nuys, Calif.	J. H. Aldes	AFS	560	4,300	1	1	4	1/1, 7/1	1-3	275.00
†Veterans Administration Center [2]	W. Los Angeles, Calif.	R. Mazet Jr.	AFS	510	14,856	..	..	4	7/1	1-2	275.00
Childrens Hospital [1,4,18]	Denver		C	.....	.....	..	..	2	4/1	1-3	50.00
Colorado General Hospital ★[2,4,18]	Denver	H. I. Barnard	AFS	63	1,139	..	..	1	1/1	1-3	85.00
Denver General Hospital ★1½,[18]	Denver	F. E. Rogers	AF	1,637	2,053	83	47	1	4/1	1-2	50.00
†St. Luke's Hospital ★[1,18]	Denver	R. G. Packard	A	481	.....	12	2	1	7/1	1	50.00
†Veterans Administration Hospital 1½	Fort Logan, Colo.		AF	.....	.....	..	..	2	Varies	1-3	275.00
†Corwin Hospital ★½,[18]	Pueblo, Colo.	D. W. Boyer	F	809	16,402	13	10	1	7/1	1	75.00
†Hartford Hospital ★[2,4]	Hartford, Conn.	J. H. T. Sweet	AFS	1,411	.....	21	10	2	7/1	1-2	50.00
Grace-New Haven Community Hospital New Haven Unit ★[2,4]	New Haven, Conn.	M. Eveleth	AFS	512	10,759	..	..	2	7/1	1-2	40.00
†Hospital of St. Raphael ★1½	New Haven, Conn.	D. S. O'Connor	AF	550	293	19	1	1	7/1	1+	75.00
Newington Home for Crippled Children [1,4]	Newington, Conn.	R. M. Yergason	C	242	1,780	1	1	2	1/1, 7/1	1	200.00
Alfred I. du Pont Institute of the Nemours Foundation [1,4]	Wilmington, Del.	A. R. Shands Jr.	C	121	1,536	..	..	3	7/1	1-3	75.00
Central Dispensary and Emergency Hosp.★[1]	Washington, D. C.	F. M. Hand	A	1,252	1,099	20	..	3	7/1	1	50.00
Freedman's Hospital ★[3,4]	Washington, D. C.	J. Neviaser	ACFS	249	3,908	8	1	1	7/1	1-3	75.00
Gallinger Municipal Hospital ★[2,4]	Washington, D. C.	M. C. Cobey	AC	421	3,585	26	3	2	7/1	1-3	75.00
†Hope Haven Hospital [1]	Jacksonville, Fla.	J. F. Lovejoy and F. L. Fort	C	156	500	..	..	1	7/1	1	.....
†James M. Jackson Memorial Hospital ★[1]	Miami, Fla.	A. Weiland	A	1,480	2,268	39	12	1	7/1	1	172.50
†Grady Memorial Hospital ★[2]	Atlanta, Ga.	T. P. Goodwyn	AFS	787	7,214	23	..	1	7/1	1-3	30.00
Scottish Rite Hosp. for Crippled Children [1]	Decatur, Ga.	J. H. Kite	C	280	.....	1	..	1	1/1	1	150.00
†Veterans [illegible] Hospital [2]	Chamblee, Ga.	P. C. Reith	AFS	.....	.....	..	..	2	7/1	1-3	275.00
Georgia [illegible] [1]	Warm Springs, Ga.	C. E. Irwin	C	700	791	..	..	2	....	1	.....
Children' [illegible]	Chicago	E. L. Compere	C	.....	1,422	1	1	1	1/1	1	75.00
Cook County Hospital ★1½,[4]	Chicago	P. Lewin	A	389	6,610	15	2	3	Varies	1-3	27.50
		J. Callahan	F	2,829	6,359	202	5	5	Varies	1-3	27.50
Michael Reese Hospital ★[2,4]	Chicago	P. Lewin	AC	662	2,577	..	..	4	....	1-3	25.00
Research and Educational Hospitals ★[3]	Chicago	F. A. Chandler	ACFS	69	6,561	1	..	4	7/1	1-3	55.00
St. Luke's Hospital ★[1,4]	Chicago	F. A. Chandler	A	682	974	4	3	2	7/1	1-3	25.00
Shriners Hospital for Crippled Children [1]	Chicago	H. A. Sofield	C	255	2,348	..	..	1	4/1	1	60.00

Numerical and other references will be found on page 1375.

15. ORTHOPEDIC SURGERY—Continued

Name of Hospital	Location	Chief of Service	Type of Training [14]	Inpatients Treated ●	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies ●	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
University of Chicago Clinics ★[3,4]	Chicago	C. H. Hatcher	ACFS	594	5,561	6	4	3	7/1	1-3	25.00
Wesley Memorial Hospital ★[2,4]	Chicago	E. L. Compere	AFS	1,180	.....	9	4	3	1/1, 7/1	1-3	25.00
†Evanston Hospital ★[½]	Evanston, Ill.	V. C. Turner	F	290	1,386	2	1	1	....	½-3	50.00
St. Francis Hospital ★[1]	Evanston, Ill.	J. J. Fahey	A	794	.....	30	..	1	Varies	1	75.00
†Veterans Administration Hospital [2]	Hines, Ill.	H. A. Sofield	AFS	1,538	.....	6	2	4	Varies	1-3	203.33
†West Suburban Hospital ★[1½]	Oak Park, Ill.	H. A. Sofield	AF	228	.....	15	2	1	7/1	½-1	150.00
Indianapolis City [illegible]	Indianapolis	F. Teague	AF	841	7,000	51	6	4	....	1-3	.....
Indiana University [illegible]	Indianapolis	G. J. Garceau	ACFS	1,018	6,931	13	5	6	....	1-3	33.33
†Methodist Hospital ★[1,4]	Indianapolis	L. Shuler	A	1,135	.....	27	4	1	7/1	1-2	200.00
†St. Vincent's Hospital ★[2]	Indianapolis	G. J. Garceau	AFS	738	.....	22	5	2	11/1	1-3	200.00
†Veter[illegible]	Indianapolis	G. J. Garceau	AF	440	1,000	1	..	1	Varies	1-5	275.00
†Iowa [illegible]	Des Moines, Iowa	E. M. George	AF	684	878	10	7	2	Varies	1-3	125.00
Unive[illegible]	Iowa City	A. Steindler	ACS	2,878	3,687	4	2	7	7/1	1	40.00
†Unive[illegible]	Kansas City, Kan.	F. D. Dickson	A	589	1,742	8	2	1	....	1	.....
†Veterans Administration Hospital [2]	Wadsworth, Kan.	R. Diveley	AFS	207	40	5	2	3	Varies	1-3	275.00
St. Francis Hospital ★[1]	Wichita, Kan.	C. Rombold	A	717	.....	4	3	1	....	1	.....
Kosair Crippled Children's Hospital [1]	Louisville, Ky.	W. B. Owen	C	202	.....	1	..	3	1/1	1	100.00
Louisville General Hospital ★[2]	Louisville, Ky.	W. B. Owen	AFS	968	5,343	23	4	1	4/1	1-2	75.00
†Veterans Administration Hospital [1½]	Louisville, Ky.	E. A. Bray	AF	.....	.....	..	..	3	7/1	1-3	.....
Charity Hospital of Louisiana ★[2,4]	New Orleans		ACFS	2,196	18,123	69	4	14	7/1	1-3	25.00
Louisiana State University Unit ★[3]	New Orleans	H. T. Simon	ACFS	(See Charity Hospital)							
Tulane University Unit ★[3]	New Orleans	G. A. Caldwell	ACFS	(See Charity Hospital)							
Independent Unit ★[3]	New Orleans	G. C. Battalora	ACFS	(See Charity Hospital)							
	New Orleans	G. A. Caldwell	AFS	400	9,000	2	1	3	....	2	150.00
	New Orleans	G. A. Caldwell	AFS	418	670	2	1	1	7/1	1	17.50
	New Orleans	G. D. Berkett	AFS	.....	.....	..	..	2	Varies	1-3	275.00
	Shreveport, La.	T. M. Oxford	AF	1,003	1,856	16	3	2	7/1	1-3	60.00
	Shreveport, La.	H. A. Durham	C	105[b]	825[b]	..	..	2	....	1-2	.....
†Children's Hospital School [1]	Baltimore	R. W. Johnson	C	391	.....	3	1	1	7/1	1	None
James Lawrence Kernan Hospital for Crippled Children [1]	Baltimore	A. F. Voshell	C	300	3,168	1	..	2	7/1	1	100.00
Johns Hopkins Hospital ★[2,4]	Baltimore	G. E. Bennett	AFS	599	10,058	4	2	4	7/1	1+	.....
†U. S. Marine Hospital ★[1]	Baltimore	J. D. Lane Jr.	A	175	1,476	3	1	1	7/1	1	181.16
†Veterans Administration Hospital [2]	Fort Howard, Md.	J. Lyford	AFS	276	.....	..	..	1	Varies	1-3	275.00
Boston City Hospital ★[1½,4]	Boston	O. J. Hermann	AF	1,191	.....	14	..	2	....	1-2	50.00
Children's Hospital ★[1,4]	Boston	W. T. Green	C	437	21,222	2	2	9	Varies	1	.....
Lahey Clinic [2]	Boston	G. E. Haggart	AC	600[b]	8,000[b]	..	..	4	Varies	1-2	125.00
Massachusetts General Hospital ★[2]	Boston	G. W. VanGorder	AFS	366	.....	14	4	2	7/1	1-3	41.67
†Peter Bent Brigham Hospital ★[1]	Boston	W. T. Green	A	455	2,600	1	..	1	1/1, 7/1	1	83.33
†Veterans Administrative Hospital [2] (West Roxbury)[1½]	Boston	J. Barr	AF	191	187	..	..	1	6/1	1-2	275.00
†Veterans Administration Hospital [2]	Framingham, Mass.		AFS	726	606	..	..	2	10/1	1-2	275.00
Shriners Hospital for Crippled Children [1]	Springfield, Mass.	G. de N. Hough	C	255	2,631	1	..	2	....	1-2	25.00
Worcester City Hospital ★[1]	Worcester, Mass.	J. W. O'Meara	A	969	882	33	3	2	....	1	50.00
University Hospital ★[3,4]	Ann Arbor, Mich.	C. E. Badgley	ACFS	1,151	9,293	6	4	6	7/1	1	101.40
†Children's Hospital [1,20]	Detroit	F. C. Kidner	C	235	1,681	..	..	1	7/1	1	50.00
City of Detroit Receiving Hospital ★[½,4,20]	Detroit	A. D. LaFerte	F	857	8,339	16	1	2	7/15	1+	149.67
†Harper Hospital ★[1,4,20]	Detroit	A. D. LaFerte	A	.....	.....	..	..	2	7/1	1-3	113.00
Henry Ford Hospital ★[3,4]	Detroit	G. L. Mitchell	ACFS	1,203	14,715	3	..	3	7/1	1½-3	200.00
†Blodgett [illegible]	Grand Rapids, Mich.	J. T. Hodgen	AC	100	.....	..	..	1	10/1	1-3	175.00
Borgess [illegible]	Kalamazoo, Mich.	H. Stryker	AF	412[b]	1,022[b]	..	..	1	....	1	.....
Shriners Hospital for Crippled Children [1]	Minneapolis	W. H. Cole	C	119	261	1	1	1	7/1	1	.....
†University Hospitals ★[1,4]	Minneapolis	W. H. Cole	A	217	1,895	5	2	3	7/1	1-3	100.00
†Veterans Administration Hospital [2]	Minneapolis		AFS	611	.....	3	1	7	....	1	275.00
Mayo Foundation [3]	Rochester, Minn.	M. S. Henderson and R. K. Ghormley	ACFS	(See page 1375)				16	....	1	.....
Gillette State Hospital for Crippled Children [1,4]	St. Paul	C. C. Chatterton	C	768	.....	8	8	4	1/1, 7/1	1	91.50
University Hospitals [1]	Columbia, Mo.	W. J. Stewart	C	338	647	3	..	1	....	1	.....
†Children's Mercy Hospital [1]	Kansas City, Mo.	N. Pickard	C	344	1,907	..	..	1	7/1	1	50.00
Kansas City General Hospital No. 1 ★[1½]	Kansas City, Mo.	R. Diveley	AF	808	4,256	74	23	2	....	1½	50.00
St. Luke's Hospital ★[1]	Kansas City, Mo.	F. Dickson	A	568	.....	4	3	1	....	1-3	75.00
Barnes Hospital ★[3]	St. Louis	J. A. Key	ACFS	684	2,136	10	3	5	7/1	1-3	None
†St. Louis City Hospital ★[½,4]	St. Louis	O. Hampton and R. O'Brien	F	1,178	2,765	98	6	2	7/1	1	86.00
St. Mary's Group of Hospitals ★[3]	St. Louis	A. O'Reilly	ACFS	457	4,061	6	2	5	Varies	3	35.00
Shriners Hospital for Crippled Children [1]	St. Louis	R. T. Odell	C	418	.....	..	..	1	....	1	.....
†Lincoln General Hospital ★[1]	Lincoln, Neb.	J. E. M. Thomson	A	798	.....	..	1	1	Varies	1-2	75.00
Nebraska Orthopedic Hospital [1,4]	Lincoln, Neb.	H. W. Orr	C	626	1,887	6	3	1	11/1	1-2	125.00
University of Nebraska Hospital ★[2,4]	Omaha	R. Schrock	AFS	110	467	2	2	1	7/1	1-3	50.00
Jersey City Hospital ★[1½,4]	Jersey City, N. J.	S. B. Sprague	AF	1,060	8,172	45	15	3	Varies	1-2	35.00
Monmouth Memorial Hospital ★[2½]	Long Branch, N.J.	N. S. Ransohoff	ACF	409	609	5	2	2	1/1	1	150.00
Hospital and Home for Crippled Children [1]	Newark, N. J.	T. Nicola and H. Kessler	C	453	4,606	2	..	1	....	1-3	.....
New Jersey Orthopaedic Hosp. and Disp.[2]	Orange, N. J.	H. W. Smith	AC	688	16,439	1	..	2	1/1	1½	90.00
Orthopaedic Hospital and Dispensary [1]	Trenton, N. J.	R. B. Ernest	C	283	1,174	4	..	1	4/1	1	150.00
†Veterans Administration Hospital [1½]	Albuquerque, N. Mex.	E. Parnall	AF	249	.....	2	2	1	Varies	1-2	275.00
†Albany Hospital ★[1,4]	Albany, N. Y.	J. W. Ghormley	A	93	.....	1	1	2	7/1	1	41.67
Binghamton City Hospital ★[2]	Binghamton, N. Y.	C. M. Allaben	AC	112	655	..	..	1	7/1	1	100.00
†House of St. Giles the Cripple [1,4]	Brooklyn	J. B. [illegible]		267	.....	..	..	1	7/1	1-2	100.00
Kings County Hospital ★[3]	Brooklyn	J. B.		413	6,837	14	14	3	7/1	1-3	70.00
Long Island College Hospital ★[2,4]	Brooklyn	J. B.		298	7,298	3	..	3	7/1	1-3	50.00
†St. Charles Hospital Orthopedic Clinic [1]	Brooklyn	H. C.		170	2,870	1	..	1	6/1	1	100.00
Buffalo General Hospital ★[2]	Buffalo	F. N. Potts	AFS	627	578	12	2	3	7/1	1-2	25.00
†Children's Hospital [1]	Buffalo	F. N. Potts	C	298	.....	..	..	1	1/1	1	50.00
Edward J. Meyer Memorial Hospital ★[2,4]	Buffalo	A. A. Gartner	AFS	125	774	6	3	4	7/1	1-3	100.00
†Millard Fillmore Hospital ★[1]	Buffalo	A. A. Gartner	A	511	.....	20	4	1	....	1-4	50.00
†Meadowbrook Hospital ★[1]	Hempstead, N. Y.	O. C. Hudson	A	540	.....	30	5	1	7/1	1	115.00
†Queens General Hospital ★[2]	Jamaica, N. Y.	F. C. Courten	AFS	1,380	2,382	8	7	1	7/1	1-3	70.00
†Nassau Hospital ★[1½,4]	Mineola, N. Y.	O. C. Hudson	AF	671	1,232	13	..	1	6/1	1	100.00
Bellevue Hospital, Div. IV—Open Div.★[2½,4]	New York City	A. Krida	ACF	730	5,933	..	..	4	1/1, 7/1	1-3	45.00
†Flower and Fifth Avenue Hospitals ★[1½,4]	New York City	A. [illegible]	[illegible]	273	1,042	4	..	1	7/1	1	.....
Hospital for Joint Diseases ★[3,4]	New York City	[illegible]	[illegible]	2,741	29,050	21	13	22	1/1	1-3	40.00
Hospital for Special Surgery [3]	New York City		ACFS	1,187	21,376	10	1	13	Varies	2	50.00
Lenox Hill Hospital ★[1½,4]	New York City	A. Wiesenthal	AF	364	2,468	8	2	1	7/1	1	50.00
Metropolitan Hospital ★[2,4]	New York City	M. J. Wilson	AFS	727	2,042	35	1	4	7/1	1	100.00
Mount Sinai Hospital ★[3,4]	New York City	R. K. Lippmann	ACFS	655	7,506	2	1	3	1/1, 7/1	1-2	50.00
New York Orthopaedic Disp. and Hospital	New York City			(Unit of Presbyterian Hospital)							
Presbyterian Hospital ★[3,4]	New York City	A[illegible]		1,685	63,215	7	..	16	....	1-5	41.66
St. Luke's Hospital ★[3]	New York City	N[illegible]		725	4,417	11	2	2	Varies	1-3	50.00
Sydenham Hospital ★[1,4]	New York City	J. G. Wishner	A	335	1,425	6	3	1	7/1	1	100.00

Numerical and other references will be found on page 1375.

15. ORTHOPEDIC SURGERY—Continued

Name of Hospital	Location	Chief of Service	Type of Training [14]	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Veterans Admin'stration Hospital [2]	New York City	S. N. Erchenholtz	AFS	674	.....	6	2	6	2/1, 8/1	1-3	203.33
Genesee Hospital ★[1]	Rochester, N. Y.		A	601b	1,000b	..	..	1	....	1	.....
†Rochester General Hospital ★[1,4]	Rochester, N. Y.	H. B. Crawford	A	720	1,235	11	8	1	7/1	1-3	85.00
Strong Memorial-Rochester Municipal Hospitals ★[3,4]	Rochester, N. Y.	R. P. Schwartz	ACFS	683	5,089	..	..	3	7/1	1-2	41.00
†U. S. Marine Hospital ★1½	Stapleton, L. I, N. Y.	A. A. Michele	AF	2,523	18,210	3	3	6	....	1-2	.....
Sea View Hospital [1,4]	Staten Island, N. Y.	D. M. Bosworth	A	329	.....	12	1	5	1/1, 7/1	1	45.00
†St. Vincent's Hospital ★[1]	Staten Island, N. Y.	D. M. Bosworth	A	440	422	10	1	1	7/1	1	50.00
New York State	W. Haverstraw, N. Y.	H. Hallock	C	390	842	1	..	3	7/1, 10/1	1	152.33
Charlotte Memor	Charlotte, N. C.	H. Winkler	A	1,500	.....	16	6	3	Varies	1	.....
Duke Hospital ★[3,4,13]	Durham, N. C.	L. D. Baker	ACFS	717	8,140	2	1	2	7/1	1	83.33
North Carolina Orthopedic Hospital [1]	Gastonia, N. C.	W. M. Roberts	C	527	4,723	8	..	2	....	1	40.00
†North Carolina Baptist Hospital ★[1,4]	Winston-Salem, N. C.	R. A. Moore	A	329	910	5	1	1	....	1-3	.....
†Children's Hospital [1,4]	Akron, Ohio	W. A. Hoyt	C	600	2,314	4	..	1	7/1	1-2	100.00
†City Hospital ★1½	Akron, Ohio	H. R. Conn	AF	1,387	.....	38	6	1	....	1	100 00
†Children's Hospital [1]	Cincinnati	J. A. Freiberg	C	323	1,152	..	..	m	7/1	1	None
Cincinnati General Hospital ★[2]	Cincinnati	J. A. Freiberg	AFS	231	4,061	8	7	3	7/1	1-2	.....
Jewish Hospital ★[1]	Cincinnati	J. A. Freiberg	A	510	.....	17	1	1	7/1	1	75.00
Cleveland Clinic Foundation Hospital 2½	Cleveland	J. A. Dickson	ACS	479	10,039	3	..	4	7/1	1-3	100.00
Mount Sinai Hospital ★1½	Cleveland	R. S. Reich	AF	882	1,293	3	2	2	7/1	1	100.00
St. Luke's Hospital ★[2]	Cleveland	T. A. Willis	AFS	958	1,970	31	5	2	7/1	2	60.00
University Hospitals ★[3,4]	Cleveland	M. Harbin	ACFS	587	2,851	7	..	2	7/1	1+	25.00
†Veterans Administration Hospital [2]	Cleveland	W. H. McGaw	AFS	235	246	..	..	3	1/1, 7/1	2	200.00
Children's Hospital [1]	Columbus, Ohio	E. H. Wilson	C	437	2,068	..	..	1	1/1, 7/1	1	60.00
Mount Carmel Hospital ★[2]	Columbus, Ohio	E. H. Wilson	AFS	1,051	.....	2	..	1	1/1	1	135.00
†White Cross Hospital ★[1]	Columbus, Ohio	J. D. Wilson	A	654	.....	7	..	1	7/1	1-2	100.00
St. Vincent's Hospital ★[3,4]	Toledo, Ohio	B. J. Hein	ACFS	962	3,474	21	4	1	....	1	.....
Youngstown Hospital ★1½	Youngstown, Ohio	R. R. Morrall	AF	900	1,018	25	5	1	7/1	1	100.00
Bone and Joint Hospital-McBride Clinic 2½	Oklahoma City	E. D. McBride	ACF	1,345	.....	..	..	3	1/1	1-2½	150.00
St. Anthony Hospital ★1½	Oklahoma City	W. K. West	AF	965	.....	18	4	1	7/1	1	75.00
University Hospitals ★[3]	Oklahoma City	W. K. West	ACFS	1,003	6,175	18	4	4	7/1	1-2	35.00
†Veterans Administration Hospital [2]	Oklahoma City	W. K. West	AFS	126	.....	..	..	2	7/1	2	275.00
†Hillcrest Memorial Hospital ★1½,[4]	Tulsa, Okla.	I. MacKenzie	AF	483	.....	18	3	1	....	1-2	.....
Emanuel Hospital ★[1]	Portland, Ore.	E. G. Chuinard	A	1,518	.....	24	7	2	10/1	1	75.00
Shriners Hospital	Portland, Ore.	L. S. Lucas	C	297	2,113	..	..	1	....	1	.....
University of Or Hospitals and	Portland, Ore.	L. S. Lucas	AFS	469	4,656	27	10	5	7/1	3	75.00
†Veterans Administration Hospital [2]	Portland, Ore.	J. B. Davis	AFS	454	1,620	1	1	1	10/1	2	275 00
State Hospital for Crippled Children [1]	Elizabethtown, Pa.	T. Outland	C	185	1,278	1	..	2	4/1	1-2	247.50
Hamot Hospital ★1½,[4]	Erie, Pa.	A. G. Davis	[illegible]	730	335	8	..	2	....	1	.....
†Graduate Hospital of the Univ. of Pa. ★1½	Philadelphia	J. T.		94	1,375	2	..	1	7/1	1-2	None
†Hahneman Hospital ★[2]	Philadelphia	E. O.		687	4,381	3	2	2	7/1	3	50.00
Hosp. of the Univ. of Pennsylvania ★[3,4]	Philadelphia	P. C. Colonna	ACFS	609	5,382	2	2	7	1/1, 7/1	1-3	20.00
Jefferson Medical College Hospital ★[1]	Philadelphia	J. R. Martin	A	302	3,077	7	3	1	....	1	.....
†Philadelphia General Hospital ★1½,[4]	Philadelphia	J. R. Moore	AF	436	.....	95	..	2	Varies	1-3	70.00
Shriners Hospital for Crippled Children [1,4]	Philadelphia	J. R. Moore	C	126	2,574	..	..	2	1/1	1-2	50.00
Temple University Hospital ★[2,4]	Philadelphia	J. R. Moore	AFS	552	5,546	16	1	3	7/1	3	50.00
†Allegheny General Hospital ★[2]	Pittsburgh	P. B. Steele and J. Heberling	AO	1,015	1,273	3	..	2	4/1	3	100.00
†Children's Hospital [1,4]	Pittsburgh	W. O. Markell	C	195	1,775	..	..	1	1/1	1-3	75.00
†Presbyterian Hospital ★[2,4]	Pittsburgh	J. S. Donaldson	AFS	287	.....	1	1	1	....	1-5	33.00
†St. Francis Hospital ★[1]	Pittsburgh	C. C. Yount	A	248	227	..	..	1	....	1	100.00
Robert Packer Hospital ★[3]	Sayre, Pa.	G. Hammond	ACFS	889	.....	21	12	2	7/1	1-2	150.00
Rhode Island Hospital ★½	Providence, R. I.	H. E. Harris	F	638	5,638	24	6	2	4/1	1	100.00
Roper Hospital ★[3]	Charleston, S. C.	F. A. Hoshall	ACFS	456	2,393	2	..	3	7/1	1-4	25.00
†Veterans	Columbia, S. C.		AFS	.....	.....	..	..	4	Varies	2-4	275.00
Shriners	Greenville, S. C.	J. W. White	C	247	1,442	1	..	2	7/1	1	100.00
†Baroness	Chattanooga, Tenn.	R. C. Robertson	AF	816	579	21	6	2	7/1	1	75.00
†Knoxville General Hospital ★[1]	Knoxville, Tenn.	R. Patterson	C	1,094	2,447	28	2	1	7/1	1	60.00
St. Joseph Hospital ★1½	Memphis, Tenn.	E. J. Lipscomb	AF	858	2,478	18	5	1	7/1	1	100.00
†Veteran	Memphis, Tenn.	D. M. Street	AFS	.....	.....	..	..	7	Varies	1-2½	.....
Willis C	Memphis, Tenn.	J. S. Speed	ACFS	1,573b	9,036b	..	..	10	1/1	1-3	50.00
†Nashvill	Nashville, Tenn.	C. C. Kayler	ACFS	390	4,320	19	4	1	7/1	1	.....
Baylor	Dallas, Texas	F. L. Butte	A	1,228	.....	15	..	2	7/1	1	50.00
Parklan	Dallas, Texas	P. M. Girard	F	.....	.....	..	..	2	....	1	75.00
Texas Scottish Rite Hospital for Cripp'ed Children [1]	Dallas, Texas	B. Carrell	C	578	3,202	1	..	3	7/1	1	75.00
†Veterans	Dallas, Texas	P. M. Girard	AF	825	.....	2	..	3	7/1	1-2	275.00
†Harris M	Fort Worth, Texas	C. F. Clayton	AFS	734	3,120	7	1	1	7/1	1-3	100.00
John Sealy Hospital ★[2,4]	Galveston, Texas	G. W. N. Eggers	AFS	522	2,506	8	2	2	....	1-3	50 00
†Hermann Hospital ★1½,[4]	Houston, Texas	E. T. Smith	AS	350	638	8	3	1	7/1	1-3	50.00
Jefferson Davis Hospital ★[2]	Houston, Texas	J. R. Bost	AFS	620	2,436	19	2	1	6/1	1-3	50.00
†Methodist Hospital ★[1,4]	Houston, Texas	J. B. Foster	C	170	775	..	..	1	Varies	1	90.00
†St. Joseph's Infirmary 1½,[4]	Houston, Texas	J. B. Foster	AF	1,068	.....	16	2	1	....	1+	150.00
†Veterans	McKinney, Texas	M. Freiberg	AFS	.....	.....	..	..	2	7/1	1-5	275.00
†Scott and W	Temple, Texas	H. B. Macey	AF	296	.....	3	1	1	1/1	1	150.00
University	Charlottesville, Va.	R. V. Funsten	ACFS	562	3,952	7	4	4	7/1	1-4	62.00
Crippled Children's Hospital [1,4]	Richmond, Va.	W. T. Graham	C	308	.....	..	..	2	1/1	1-2	100.00
†Medical College of Virginia, Hosp. Div. ★[2]	Richmond, Va.	H. P. Mauck	[illegible]	873	2,588	23	9	3	7/1	1	46.50
†Veterans Administration Hospital 1½	Richmond, Va.	R. C.		.....	.....	..	..	2	1/1	1-3	275.00
Children's Orthopedic Hospital [1,4]	Seattle	H. J.		470	20,380	3	3	1	....	1	.....
King County Hospital ★1½	Seattle	R. Anderson	AF	1,287	2,237	77	16	3	7/1	1	125.00
Providence Hospital ★[1]	Seattle	I. O. McLemore	A	591	.....	3	1	1	7/1	1	100.00
Swedish Hospital ★1½	Seattle	J. LeCocq	AS	1,431	.....	4	3	1	....	1	.....
†Shriners Hospital for Crippled Children [1]	Spokane, Wash.	A. O. Adams	C	83	419	1	..	1	1/1	1	.....
Charleston General Hospital ★[1]	Charleston, W. Va.	J. E. Cannaday	A	1,042	5,579	11	5	2	7/1	1-3	125.00
Morris Memorial Hospital [1,4]	Milton, W. Va.	P. H. Harmon	C	265	157	3	..	2	7/1, 11/1	1	100.00
State of Wisconsin General Hospital ★[3,4]	Madison, Wis.	R. E. Burns	ACFS	1,592	5,827	19	10	6	7/1	3	25.00
†Milwaukee Children's Hospital [1,4]	Milwaukee	A. C.		.....	.....	..	..	1	1/1	1	.....
Milwaukee County Hospital ★[1,4]	Milwaukee	C. C.		1,176	4,268	37	6	3	Varies	1-3	75.00

Hospitals, 226; Assistant Residencies and Residencies, 565

16. OTOLARYNGOLOGY

(See Ophthalmology)

Numerical and other references will be found on page 1375.

17. PATHOLOGY

The following services approved by the Council are accredited by the American Board of Pathology
(See footnotes 1, 2 and 3 for number of years credit)

United States Army.—Residencies available to medical officers, U. S. Army.
Fitzsimons General Hospital ★[3]....................Denver
Army Institute of Pathology [3]....................Washington, D. C.
Walter Reed General Hospital ★[3]....................Washington, D. C.
Percy Jones General Hospital ★[1]....................Battle Creek, Mich.

United States Navy.—Residencies available to medical officers, U. S. Navy.
U. S. Naval Hospital ★[3]....................Long Beach, Calif.
U. S. Naval Hospital ★[3]....................San Diego, Calif.
U. S. Naval Hospital ★[1]....................Bethesda, Md.
U. S. Naval Hospital ★[1]....................Brooklyn
U. S. Naval Hospital ★[3]....................St. Albans, N. Y.
U. S. Naval Hospital ★[3]....................Philadelphia

Name of Hospital	Location	Chief of Service	Inpatients Treated ♦	Surgical Specimens	Number Examined Microscopically	Autopsy Percentage	Asst. Res. and Residencies ♦	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Jefferson and Hillman Hospitals ★[2,4]	Birmingham, Ala.	R. D. Baker	20,281	3,837	3,809	39	5	7/1	1	$ 30.00
University Hospital ★[3]	Little Rock, Ark.	R. H. Rigdon	3,805	1,792	1,792	50	1	....	1-3	.....
Loma Linda Sanitarium and Hospital ★[3]	Loma Linda, Calif.	C. S. Small	4,117	.....	.....	45	5	7/1	1-3	125.00
Cedars of Lebanon Hospital ★[3]	Los Angeles	R. Straus	14,133	4,827	3,522	39	2	7/1	1	100.00
Children's Hospital [1,4]	Los Angeles	R. E. Knutti	5,018	371	362	80	1	....	1	.....
Hospital of the Good Samaritan ★[1,4]	Los Angeles	R. Hammack	11,200	4,225	3,168	36	1	7/1	1	200.00
Los Angeles County Hospital ★[2,4]	Los Angeles	E. M. Butt	3,394	7,000	6,850	34	2	Varies	2	157.20
St. Vincent's Hospital ★[1]	Los Angeles	J. E. Kahler	12,739	3,896	1,842	43	1	....	1	.....
White Memorial Hospital ★[1]	Los Angeles	O. B. Pratt	8,574	4,341	2,515	44	2	....	1-3	130.00
Highland-Alameda County Hospital ★[4]	Oakland, Calif.	R. J. Parsons	8,916	1,534	859	59	2	7/1	1-3	155.00
Collis P. and Howard Huntington Memorial Hospital ★[3]	Pasadena, Calif.	A. G. Foord	6,969	3,221	2,470	59	2	2/1	1	85.00
French Hospital ★[1,4]	San Francisco	G. A. Watson	4,706	.....	.....	27	1	....	1	.....
Mount Zion Hospital ★[1,4]	San Francisco	G. R. Biskind	5,362	2,719	1,763	64	3	7/1	1	75.00
San Francisco Hospital ★[4]	San Francisco	....	17,900	1,262	1,262	27	7	....	1	175.00
Stanford University Hospitals ★[3,4]	San Francisco	A. J. Cox	10,127	1,885	1,885	44	2	7/1	1-2	50.00
University of California Hospital ★[4]	San Francisco	J. F. Rinehart	7,518	2,904	2,904	69	3	7/1	1	50.00
Santa Clara County Hospital ★[1]	San Jose, Calif.	F. Proescher	5,737	2,100	1,766	31	1	....	1	200.00
Santa Barbara Cottage Hospital ★[3]	Santa Barbara, Calif.	W. O. Russell	5,699	2,638	2,207	51	4	7/1	1	50.00
Childrens Hospital [1]	Denver	H. D. Palmer	8,252	297	294	90	1	7/1	1	50.00
Colorado General Hospital ★[3]	Denver	J. B. McNaught	3,696	1,388	1,285	75	5	7/1	1-3	80.00
Denver General Hospital ★[1]	Denver	W. W. Williams	9,562	1,323	1,150	34	1	7/1	1-2	50.00
St. Luke's Hospital ★[3]	Denver	W. C. Black	8,175	7,038	4,063	36	2	....	1-3	.....
Colorado State Hospital [1]	Pueblo, Colo.	M. Gallavan	870	83	81	42	3	....	1	150.00
Bridgeport Hospital ★[3]	Bridgeport, Conn.	I. B. Akerson	11,993	2,519[b]	2,519[b]	36	1	10/16	1	150.00
Hartford Hospital ★[3]	Hartford, Conn.	R. E. Kendall	22,825	6,433	5,902	44	2	7/1	1-3	50.00
St. Francis Hospital ★[1]	Hartford, Conn.	L. P. Hastings	15,592	3,769	3,769	31	1	....	1	.....
New Britain General Hospital ★[1]	New Britain, Conn.	P. D. Rosahn	7,158	3,203	2,289	29	1	7/1	1	.....
Grace-New Haven Community Hospital New Haven Unit ★[3,4]	New Haven, Conn.	C. J. Bartlett	6,214	2,391	1,755	29	1	7/1	3	40.00
Delaware Hospital ★[3]	Wilmington, Del.	J. W. Howard	10,882	2,498	2,498	51	1	3/1	1	125.00
Children's Hospital [1,4]	Washington, D. C.	E. C. Rice	6,889	250	89	83	1	....	1	.....
Doctors Hospital ★[1]	Washington, D. C.	O. B. Hunter	8,487	2,725	2,168	65	1	7/1	1-3	100.00
Gallinger Municipal Hospital ★[3,4]	Washington, D. C.	A. R. Monaco	17,636	2,115	1,766	44	2	7/1	1-3	75.00
Garfield Memorial Hospital ★[3,4]	Washington, D. C.	J. W. Lindsay	14,125	2,250	1,504	56	1	7/1	1-3	150.00
Georgetown University Hospital ★[3]	Washington, D. C.	V. J. Dardinski	6,930	1,680	988	40	2	7/1	1-2	75.00
George Washingt	Washington, D. C.	R. M. Choisser	2,886	570	570	48	3	....	1-3	.....
Providence Hosp	Washington, D. C.	H. H. Leffler	11,027	2,568	1,765	40	1	....	1-3	.....
Sibley Memorial	Washington, D. C.	O. B. Hunter	10,854	3,748	3,510	68	1	....	1-3	100.00
James M. Jackson Memorial Hospital ★[3]	Miami, Fla.	P. Rezek	16,445	3,531	490	31	1	7/1	3	95.50
Grady Memorial Hospital ★[3,4]	Atlanta, Ga.	W. H. Sheldon	15,661	2,881	2,881	39	3	....	1	.....
University Hospital ★[3,4]	Augusta, Ga.	E. R. Pund	11,416	3,124	2,458	30	1	7/1	1-2	40.00
Emory University Hospital ★[3]	Emory University, Ga.	S. Madden	9,296	2,168	2,168	39	4	....	1	.....
Augustana Hospital ★[1]	Chicago	G. Milles	7,248	2,973	2,384	30	1	1/1, 7/1	1-3	50.00
Children's Memorial Hospital [1,4]	Chicago	J. P. Simonds	3,940	233	233	94	1	Varies	1-2	75.00
Cook County Hospital ★[3,4]	Chicago	H. Popper	61,850	6,219	6,219	21	23	Varies	1-3	.....
Grant Hospital ★[1]	Chicago	C. C. Mason	7,523	4,450	2,427	23	1	7/1	1-3	125.00
Illinois Masonic Hospital ★[1]	Chicago	L. S. King	5,579	1,817	1,231	31	1	8/1	1	50.00
Mercy Hospital ★[3]	Chicago	J. W. Henry	8,267	2,099	1,930	44	1	....	1-3	.....
Michael Reese Hospital ★[3,4]	Chicago	O. Saphir	14,830	4,992	4,992	66	10	....	1-3	50.00
Mount Sinai Hospital ★[3,4]	Chicago	I. Davidsohn	7,320	2,930	2,736	40	2	7/1	1	50.00
pital ★[1]	Chicago	H. R. Fishback	6,202	2,343	1,315	33	1	7/1	3	25.00
spital ★[3,4]	Chicago	....	5,800	1,261	1,211	70	1	....	1-3	.....
	Chicago	G. M. Hass	11,928	3,872	3,872	64	5	....	1-3	.....
	Chicago	A. C. Webb	5,140	1,365	1,365	57	1	....	1	.....
Research and Educational Hospitals ★[3]	Chicago	G. A. Bennett	5,945	2,124	2,142	90	3	7/1	1-3	55.00
St. Luke's Hospital ★[3,4]	Chicago	E. F. Hirsch	14,303	5,707	5,000	59	5	7/1	1-3	25.00
University of Chicago Clinics ★[3]	Chicago	P. R. Cannon	11,779	2,752	2,553	83	2	7/1	1-3	25.00
Wesley Memorial Hospital ★[1,4]	Chicago	T. H. Laipply	12,541	.....	2,731	62	3	1/1, 7/1	1-3	25.00
Evanston Hospital ★[3]	Evanston, Ill.	J. McCarter	8,996	3,394	1,878	86	5	....	3	50.00
St. Francis Hospital ★[3]	Evanston, Ill.	L. F. Bleyer	9,999	1,979	1,927	35	1	....	1	75.00
Veterans Administration Hospital [3]	Hines, Ill.	W. L. McNamara	17,830	4,415	4,415	..	1	....	1-3	275.00
Methodist Hospital of Central Illinois ★[1,4]	Peoria, Ill.	L Loeffler	6,441	3,262	2,147	26	1	7/1	1	100.00
St. Francis Hospital ★[3,4]	Peoria, Ill.	J. E. Kraus	12,883	4,047	2,792	35	1	4/1	1-3	150.00
St. Joseph Hospital ★[1]	Fort Wayne, Ind.	S. M. Rabson	7,548	2,269	2,008	31	2	1/1, 7/1	1	125.00
Indianapolis City Hospital ★[3]	Indianapolis	W. B. Dublin	10,565	1,943	1,918	41	2	....	1-3	.....
Indiana University Medical Center ★[3,4]	Indianapolis	J. L. Arbogast	9,740	3,289	3,289	58	4	....	1-3	.....
Methodist Hospital ★[3]	Indianapolis	H. M. Banks	20,765	9,885	7,200	33	3	1/1	1-2	200.00
Ball Memorial Hospital ★[1,4]	Muncie, Ind.	L. G. Montgomery	7,425	3,486	3,081	27	2	7/1	1-2	100.00
Memorial Hospital ★[1,11]	South Bend, Ind.	....	9,229	1,442	1,137	34	1	7/1	2	150.00
Iowa Methodist Hospital ★[1]	Des Moines, Iowa	R. Birge	10,271	3,327	3,128	74	2	Varies	1-3	125.00
Mercy Hospital ★[1]	Des Moines, Iowa	F. C. Coleman	7,546	1,869	1,655	40	1	7/1	1-3	100.00
University Hospitals ★[3,4]	Iowa City	E. D. Warner	18,496	.....	.....	56	3	7/1	1	40.00
University of Kansas Hospital ★[3,4]	Kansas City, Kan.	H. R. Wahl	8,181	3,231	2,114	59	2	....	1	.....
St. Francis Hospital ★[3]	Wichita, Kan.	C. A. Hellwig	13,373	6,079	6,070	43	1	....	1	.....
Louisville General Hospital ★	Louisville, Ky.	A. J. Miller	12,006	1,716	1,689	38	3	4/1	1-2	45.00
Charity Hospital of Louisiana ★[3,4]	New Orleans	E. Moss	41,449	8,508	8,508	49	10	7/1	1-4	25.00
Southern Baptist Hospital ★[1]	New Orleans	E. H. Lawson	16,279	5,611	5,611	25	2	....	1	150.00
Touro Infirmary ★[3]	New Orleans	S. H. Colvin	15,383	5,034	5,034	55	1	7/1	1	17.50
U. S. Marine Hospital ★[1]	New Orleans	C. E. Dunlap	6,482	1,487	1,381	76	1	....	1	.....
Shreveport Charity Hospital ★[1]	Shreveport, La.	W. R. Matthews	11,181	3,186	3,186	47	2	....	1	.....
Maine General Hospital ★[3]	Portland, Me.	J. E. Porter	8,176	1,757	1,757	29	2	....	1+	50.00
Baltimore City Hospitals ★[3]	Baltimore	C. G. Warner	7,188	672	642	55	4	7/1	1	35.00
Johns Hopkins Hospital ★[3]	Baltimore	A. Rich	18,235	3,100	3,100	65	1	7/1	1	.....
Sinai Hospital ★[3,4]	Baltimore	T. Weinberg	7,654	2,736	2,736	60	4	7/1	1-3	35.00
U. S. Marine Hospital ★[1]	Baltimore	C. H. Binford	7,954	4,578	4,578	67	1	7/1	1-3	184.16

Numerical and other references will be found on page 1375.

17. PATHOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Surgical Specimens	Number Examined Microscopically	Autopsy Percentage	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
University Hospital ★[2,4]	Baltimore	H. R. Spencer	9,834	4,685	4,685	58	2	7/1	1-2	.....
Beverly Hospital ★[3]	Beverly, Mass.	M. L. Trumbull	4,649	1,074	1,074	80	1	....	1	50.00
Beth Israel Hospital ★[3]	Boston	M. J. Schlesinger	6,020	2,929	2,929	58	1	10/1	1-3	79.16
Boston City Hospital ★[3,4]	Boston	F. Parker Jr.	36,888	4,110	4,110	19	5	....	1	50.00
Boston Lying-In Hospital [1,4]	Boston	A. T. Hertig	2,470	1,214	1,214	63	3	1/1	1	50.00
Children's Hospital ★[4]	Boston	S. Farber	7,693	877	877	76	1	....	1	.....
Massachusetts General Hospital ★	Boston	T. B. Mallory	7,227	8,626	8,626	53	3	....	1-3	41.67
Massachusetts Memorial Hospitals ★[3]	Boston	R. Osgood	7,864	2,002	2,002	70	1	10/1	1	50.00
New England Deaconess Hospital [3]	Boston	S. Warren	6,910	6,729	6,729	63	3	1/1, 4/1	1	75.00
Peter Bent Brigham Hospital ★[3]	Boston	S. B. Wolbach	4,482	1,618	1,618	74	2	....	1-3	.....
Mount Auburn Hospital ★[1]	Cambridge, Mass.	H. E. MacMahon	6,509	2,071	2,071	45	1	Varies	1	None
Salem Hospital ★[3]	Salem, Mass.	D. A. Nickerson	5,788	2,000	2,000	32	1	....	1	50.00
Pondville Hospital [1]	Walpole, Mass.	S. Warren	724	1,367	1,367	74	2	....	1	.....
Worcester City Hospital ★[3,4]	Worcester, Mass.	R. H. Goodale	9,489	2,758	2,270	25	1	....	1	50.00
Worcester State Hospital [3,4]	Worcester, Mass.	W. Freeman	715	44	44	14	1	....	1	.....
University Hospital ★[3,4]	Ann Arbor, Mich.	C. V. Weller	14,471	6,573	6,573	61	1	....	1	.....
Leila Y. Post Montgomery Hospital ★[1]	Battle Creek, Mich.	G. Schelm	6,749	4,309	4,309	31	1	7/1	1-3	200.00
City of Detroit Receiving Hospital ★[3,4]	Detroit	O. A. Brines	16,816	2,701	2,701	25	2	....	1-3	.....
Grace Hospital ★[3]	Detroit	C. I. Owen	15,191	11,498	7,858	35	1	7/1	1-3	75.00
Harper Hospital ★[3,4]	Detroit	P. F. Morse	19,050	.....	.....	33	2	....	1	.....
Henry Ford Hospital ★[3,4]	Detroit	F. W. Hartman	16,430	4,716	4,716	57	3	7/1	1-3	200.00
Herman Kiefer Hospital [1]	Detroit	W. L. Brosius	7,477	186	186	47	1	....	1	.....
Providence Hospital ★[3]	Detroit	D. H. Kaump	12,873	3,848	3,848	73	1	....	1	.....
St. Mary's Hospital ★[3]	Detroit	M. E. Maum	9,795	683	683	59	2	....	3	140.00
Woman's Hospital ★[1,4]	Detroit	D. Beaver	8,138	3,631	3,441	60	1	....	1	.....
Wayne County General Hospital and Infirmary ★[3,4]	Eloise, Mich.	S. E. Gould	5,205	2,193	2,193	30	2	7/1	1	197.50
Hurley Hospital ★[1]	Flint, Mich.	G. R. Backus	13,899	1,909	1,882	53	1	7/1	1	.....
Blodgett Memorial Hospital ★[1]	Grand Rapids, Mich.	C. A. Payne	5,039	.....	3,429	54	1	Varies	1-2	175.00
St. Luke's Hospital ★[3]	Duluth, Minn.	A. H. Wells	8,098	2,461	2,200	78	1	....	1	.....
St. Mary's Hospital ★[1]	Duluth, Minn.	W. V. Knoll	9,235	6,010	5,483	79	1	....	1	.....
Minneapolis General Hospital ★[3]	Minneapolis	A. J. Hertzog	10,111	1,275	1,115	51	1	1/1, 7/1	1-3	100.00
Mayo Foundation	Rochester, Minn.	H. E. Robertson	(See page 1375)				12	....	1	.....
Ancker Hospital ★[1]	St. Paul	J. F. Noble	7,072	809	672	68	1	4/1	1	91.50
Charles T. Miller Hospital ★[3]	St. Paul	K. Ikeda	8,283	3,864	3,393	49	1	1/1	1-3	100.00
St. Louis County Hospital ★[3]	Clayton, Mo.	H. Allen	3,022	617	585	39	1	....	1	.....
Kansas City General Hospital No. 1 ★[3]	Kansas City, Mo.	V. Buhler	9,182	2,285	2,055	60	3	7/1	1-3	50.00
Research Hospital ★[3]	Kansas City, Mo.	H. K. B. Allebach	6,913	2,722	2,615	56	1	....	1	.....
St. Joseph Hospital ★[3,4]	Kansas City, Mo.	R. W. Kerr	9,788	4,967	3,927	46	1	....	1	.....
St. Luke's Hospital ★[1]	Kansas City, Mo.	F. C. Helwig	8,258	5,508	4,296	70	1	....	1	.....
Barnes Hospital ★[1,4]	St. Louis	G. J. Dammin	14,207	3,250	3,250	70	2	7/1	1-3	25.00
Homer G. Phillips Hospital ★[1]	St. Louis	S. H. Gray	11,709	1,402	1,331	23	3	7/1	1	50.00
Jewish Hospital ★[1,4]	St. Louis	S. H. Gray	7,963	.....	.....	32	1	....	1	.....
St. Louis City Hospital ★[3,4]	St. Louis	S. H. Gray	16,516	1,922	2,904	50	3	....	1-3	.....
St. Mary's Group of Hospitals ★[3]	St. Louis	H. Pinkerton	14,497	7,553	7,553	47	3	Varies	1	35.00
Lincoln General Hospital ★[1]	Lincoln, Neb.	F. H. Tanner	5,025	.....	.....	72	1	....	1	.....
Creighton Memorial St. Joseph's Hosp. ★[3]	Omaha	C. B. Russum	11,904	20,004	8,395	42	1	7/1	1-2	100.00
Nebraska Methodist Hospital ★[1]	Omaha	J. R. Schenken	5,695	2,404	2,404	50	1	Varies	1-4	50.00
University of Nebraska Hospital ★[3]	Omaha	J. P. Tollman	2,651	783	783	98	2	7/1	1-3	50.00
Mary Hitchcock Memorial Hospital ★[3]	Hanover, N. H.	R. E. Miller	4,671	1,703	1,505	85	1	....	1	.....
Elliot Hospital [1]	Manchester, N. H.	S. M. Brooks	3,440	1,148	822	68	1	....	1	.....
Atlantic City Hospital ★[1]	Atlantic City, N. J.	F. W. Konzelmann	7,012	1,332	961	34	1	7/1	1	.....
Cooper Hospital ★[3]	Camden, N. J.	W. T. Read Jr.	8,670	1,926	1,854	41	1	7/1	1-3	83.33
West Jersey Hospital ★[1]	Camden, N. J.	G. O. Favorite	6,382	1,329	1,329	32	2	7/1	1	75.00
Jersey City Hospital ★[1,4]	Jersey City, N. J.	A. Gnassi	21,864	3,314	3,314	18	2	Varies	1-2	35.00
Newark Beth Israel Hospital ★[3,4]	Newark, N. J.	W. Antopol	10,657	3,431	3,431	32	7	7/1	1	25.00
Newark City Hospital ★[3]	Newark, N. J.	H. S. Martland	11,761	900	900	24	2	6/1	1-3	.....
Paterson General Hospital ★[1]	Paterson, N. J.	A. H. Davis	8,916	3,422	2,338	26	1	....	1	.....
Albany Hospital ★[3,4]	Albany, N. Y.	A. W. Wright	13,482	6,172	6,172	60	6	7/1	1	41.67
Bender Hygienic Laboratory [3]	Albany, N. Y.	J. J. Clemmer	.....	9,506	9,506	..	4	7/1	3-4	100.00
Binghamton City Hospital ★[3]	Binghamton, N. Y.	V. W. Bergstrom	9,458	2,437	2,437	38	2	7/1	1	100.00
Brooklyn Hospital ★[3]	Brooklyn	J. A. deVeer	7,879	2,173	2,173	33	2	7/1	1-3	25.00
Cumberland Hospital ★[3,4]	Brooklyn	S. H. Polayes	6,297	1,805	3,613	30	1	7/1	1	120.00
Israel Zion Hospital ★[1,4]	Brooklyn	J. M. Ravid	10,677	1,753	1,753	27	2	7/1	1	100.00
Jewish Hospital ★[3,4]	Brooklyn	D. M. Grayzel	13,396	4,525	3,785	41	5	10/1	1	30.00
Kings County Hospital ★[3,4]	Brooklyn	C. Burn	57,609	5,118	9,510	17	6	7/1	1-2	70.00
Long Island College Hospital ★[3,4]	Brooklyn	J. R. Oliver	8,840	6,073	2,536	36	1	....	1	25.00
St. John's Hospital ★[1]	Brooklyn	R. Gettinger	4,483	6,047	4,007	32	1	....	1	.....
Buffalo General Hospital ★[3]	Buffalo	K. L. Terplan	10,015	3,725	3,701	44	6	7/1	1-3	25.00
Edward J. Meyer Memorial Hospital ★[3,4]	Buffalo	S. Sanes	10,345	2,290	1,661	38	4	7/1	3	100.00
Millard Fillmore Hospital ★[3]	Buffalo	A. V. Postoloff	12,165	5,073	5,040	31	1	....	1-4	50.00
Meadowbrook Hospital ★[1]	Hempstead, N. Y.	T. J. Curphey	4,500	2,158	2,158	44	3	1/1	1	115.00
Queens General Hospital ★[3,4]	Jamaica, N. Y.	A. Angrist	12,937	9,595	9,296	45	5	....	1-2	70.00
Mount Vernon Hospital ★[1]	Mount Vernon, N. Y.	J. G. Sharnoff	6,224	1,819	1,819	29	1	....	1	.....
Beth Israel Hospital ★[3,4]	New York City	A. Plaut	7,622	2,363	2,363	32	2	7/1	1	50.00
Bronx Hospital ★[3]	New York City	J. Felsen	8,437	1,686	1,416	24	2	7/1	1-3	75.00
Flower and Fifth Avenue Hospitals ★[3]	New York City	G. Higgins	9,046	3,075	2,950	27	2	7/1	1	.....
Fordham Hospital ★[1,4]	New York City	L. R. Ferraro	11,719	1,878	1,875	21	3	7/1	1	.....
Goldwater Memorial Hospital ★[3,4]	New York City	J. Rosenthal	1,581	980	980	38	3	7/1	1	50.00
Harlem Hospital ★[4]	New York City	S. Weintraub	18,227	2,843	2,843	17	4	1/1, 7/1	1	70.00
Jewish Memorial Hospital ★[1]	New York City	A. Angrist	5,483	1,856	2,462	38	1	7/1	1-2	100.00
Lenox Hill Hospital ★[3,4]	New York City	G. L. Rohdenburg	11,939	2,824	2,821	44	1	7/1	1	50.00
Lincoln Hospital ★[3,4]	New York City	C. R. Brown	10,296	1,648	1,977	22	2	....	1	.....
Memorial Hospital ★[1]	New York City	F. W. Stewart	5,300	17,104	17,104	49	5	....	1-3	.....
Metropolitan Hospital ★[1,4]	New York City	A. Saccone	10,430	1,011	1,011	22	2	9/1, 10/1	1	100.00
Montefiore Hospital for Chronic Dis. ★[3,4]	New York City	H. M. Zimmerman	2,396	372[b]	372[b]	51	4	....	1	25.00
Morrisania City Hospital ★[4]	New York City	W. Aronson	10,677	2,114	2,114	19	1	....	1	.....
Mount Sinai Hospital ★[3,4]	New York City	P. Klemperer	14,826	5,863	5,863	63	10	....	1	50.00
New York City Hospital ★[3]	New York City	J. R. Lisa	9,330	1,729	1,473	39	5	7/1	1	70.00
New York Hospital ★[2,4]	New York City	J. J. Kidd	18,899	7,249	6,732	60	1	....	1	.....
New York Post-Graduate Medical School and Hospital ★[3,4]	New York City	M. N. Richter	8,584	4,065	4,027	38	3	1/1, 7/1	1+	30.00
Presbyterian Hospital ★[3,4]	New York City	H. P. Smith	27,442	5,839	4,961	58	8	....	1	.....
Roosevelt Hospital ★[1,4]	New York City	W. W. Brandes	8,211	2,264	2,264	28	1	7/1	1	58.00
St. Luke's Hospital ★[3,4]	New York City	L. C. Knox	8,349	1,965	1,965	35	3	Varies	1-3	50.00
St. Vincent's Hospital ★[1,4]	New York City	A. Rottino	12,363	2,283	2,283	42	2	1/1	1-3	50.00
Sydenham Hospital ★[1]	New York City	A. Ginzler	6,325	1,263	1,100	26	2	7/1	1	100.00
Veterans Administration Hospital [3]	New York City	E. S. Olsen	10,838	.....	.....	30	2	....	1-3	.....

Numerical and other references will be found on page 1375.

17. PATHOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Willard Parker Hospital [3,4]	New York City	V. P. Dolgopol	3,065	56	56	57	1	1/1	1	120.00
Rochester General Hospital ★[1,4]	Rochester, N. Y.	M. G. Bohrod	11,204	5,700	4,599	72	4	7/1	1-3	60.00
St. Mary's Hospital ★[3,4]	Rochester, N. Y.	S. M. Bouton	10,007	2,537	1,812	42	2	7/1	1	125.00
Strong Memorial-Rochester Municipal Hospitals ★[2,4]	Rochester, N. Y.	G. H. Whipple	16,100	3,528	3,528	72	1	7/1	1-2	.....
Ellis Hospital ★[3,4]	Schenectady, N. Y.	E. Kellert	13,694	3,058	3,058	29	1	7/1	1-3	100.00
Syracuse University Medical Center ★[3]	Syracuse, N. Y.	....	.....	4,512	4,542	..	1	7/1	1-3	41.66
Samaritan Hospital ★[1,4]	Troy, N. Y.	S. H. Klinck Jr.	5,310	.....	.....	25	1	....	1	.....
Grasslands Hospital ★[3,4]	Valhalla, N. Y.	G. Y. McClure	3,914	1,485	1,725	51	2	7/1	1-3	75.00
Charlotte Memorial Hospital ★[3]	Charlotte, N. C.	P. Kimmelstiel	10,131	5,020	4,910	48	3	4/1, 7/1	1-3	75.00
Duke Hospital ★[3,4]	Durham, N. C.	W. D. Forbus	13,019	9,581	9,581	63	3	7/1	1	83.33
Watts Hospital ★[1]	Durham, N. C.	J. U. Gunter	8,061	2,156	2,156	36	1	....	1	.....
North Carolina Baptist Hospital ★[3,4]	Winston Salem, N. C.	R. P. Morehead	6,918	13,160	13,160	60	4	....	1-3	.....
City Hospital ★[1]	Akron, Ohio	L. Catron	14,088	4,117	4,117	35	2	....	1	100.00
Christ Hospital ★[1]	Cincinnati	J. W. Leichliter	10,471	6,559	2,913	38	1	7/1	1	.....
Cincinnati General Hospital ★[1,4]	Cincinnati	R. W. Austin	14,073	2,139	2,109	30	8	....	1	.....
Good Samaritan Hospital ★[3]	Cincinnati	W. McK. Germain	14,729	6,757	8,421	23	1	7/1	1-2	105.00
City Hospital ★[3,4]	Cleveland	H. G. Schlumberger	13,730	2,233	.....	56	6	7/1	1-4	50.00
Cleveland Clinic Foundation Hospital [2]	Cleveland	J. B. Hazard	7,447	3,111	3,111	35	1	7/1	1-3	100.00
Mount Sinai Hospital ★[3,4]	Cleveland	B. S. Kline	8,479	2,778	2,778	76	2	7/1	1	100.00
St. Luke's Hospital ★[1]	Cleveland	R. Dominguez	11,224	3,070	2,784	47	1	6/25	1	60.00
St. Vincent Charity Hospital ★[1]	Cleveland	D. J. Rehbock	7,612	1,738	1,691	32	1	....	1+	75.00
University Hospitals ★[3]	Cleveland	H. T. Karsner	18,508	4,254	4,254	52	5	7/1	1	25.00
Starling-Loving University Hospital ★[3,4]	Columbus, Ohio	H. L. Reinhart	7,380	3,003	2,978	66	2	7/1	1-3	50.00
White Cross Hospital ★[3]	Columbus, Ohio	R. S. Fidler	10,035	7,316	6,930	32	2	....	1-3	100.00
Miami Valley Hospital ★[1]	Dayton, Ohio	M. Oosting	11,347	7,038	7,038	38	1	9/1	1-3	75.00
Toledo Hospital ★[1]	Toledo, Ohio	B. Steinberg	8,126	2,269	1,803	53	1	....	1	125.00
Youngstown Hospital ★[1]	Youngstown, Ohio	H. K. Giffen	17,610	3,739	3,739	29	3	7/1	1	100.00
University Hospitals ★[3]	Oklahoma City	H. C. Hopps and B. Halpert	6,070	1,777	1,554	33	3	7/1	1-2	35.00
Emanuel Hospital ★[1,4]	Portland, Ore.	H. H. Foskett	11,465	4,131	4,163	43	1	4/1	1	75.00
Good Samaritan Hospital ★[3]	Portland, Ore.	O. H. Manlove	13,145	3,307	.....	53	1	7/1	1	75.00
St. Vincent's Hospital ★[1]	Portland, Ore.	F. R. Menne	10,527	.....	.....	43	2	....	1	.....
University of Oregon Medical School Hospitals and Clinics ★[3,4]	Portland, Ore.	W. C. Hunter	6,193	1,457	1,457	51	5	7/1	3	75.00
Abington Memorial Hospital ★[3]	Abington, Pa.	J. Elman	8,791	2,454	2,432	47	2	7/1	1	100.00
Allentown Hospital ★[3]	Allentown, Pa.	J. J. Wenner	9,542	3,922	2,225	31	1	....	1-3	.....
Veterans Administration Hospital [1]	Aspinwall, Pa.	W. W. Bennett	5,789	919	2,429	33	3	Varies	1-3	.....
St. Luke's Hospital ★[1]	Bethlehem, Pa.	H. A. Rothrock	7,277	1,537	1,537	43	1	6/1	1	100.00
Bryn Mawr Hospital ★[1]	Bryn Mawr, Pa.	M. M. Strumia	7,214	3,897	2,922	45	2	4/1	1	100.00
George F. Geisinger Memorial Hospital ★[1]	Danville, Pa.	H. F. Hunt	6,922	1,966	1,970	51	1	7/1	1	75.00
Pittsburgh City Home and Hospitals [4]	Mayview, Pa.		61	.....	.....	..	1	....	1	.....
Episcopal Hospital ★[1,4]	Philadelphia		8,939	1,337	5,825	45	1	....	1	50.00
Germantown Dispensary and Hospital ★	Philadelphia		6,951	1,273	724	60	1	7/1	1-2	50.00
Graduate Hospital of the University of Pennsylvania ★[3]	Philadelphia	E. A. Case	5,317	1,961	1,961	76	3	7/1	1-2	.....
Hahnemann Hospital ★[3,4]	Philadelphia	S. W. Sappington	10,995	.....	.....	46	2	....	1-3	.....
Hospital of the University of Penna. ★[3,4]	Philadelphia	E. B. Krumbhaar	16,324	2,889	2,889	75	12	Varies	1-3	.....
Jefferson Medical College Hospital ★[3]	Philadelphia	C. J. Bucher	17,794	.....	.....	55	3	....	1	.....
Jewish Hospital ★[1,4]	Philadelphia	H. Ingleby	8,665	2,035	1,832	56	3	7/1	1-2	50.00
Lankenau Hospital ★[3]	Philadelphia	C. E. Brown	5,531	5,369	5,369	59	1	7/1	1-3	100.00
Mount Sinai Hospital ★[1,4]	Philadelphia	D. R. Meranze	6,458	2,460	2,460	61	1	6/1	1-2	50.00
Pennsylvania Hospital ★[3]	Philadelphia	A. R. Crane	9,896	2,038	2,038	44	2	7/1	1-3	20.00
Philadelphia General Hospital ★[3,4]	Philadelphia	J. H. Clark	21,004	2,113	2,113	70	6	....	1-3	70.00
Presbyterian Hospital ★[3]	Philadelphia	R. P. Custer	6,390	1,908	1,908	59	3	....	1-3	50.00
Temple University Hospital ★[3,4]	Philadelphia	E. E. Aegerter	11,501	5,459	5,459	50	3	7/1	3	50.00
Allegheny General Hospital ★[3]	Pittsburgh	S. R. Haythorn	11,171	2,301	.....	23	2	7/1	1	100.00
Children's Hospital [1,4]	Pittsburgh	M. L. Menten	4,959	238	238	36	1	7/1	1-3	75.00
Elizabeth Steel Magee Hospital [1,4]		Beauregard	7,759	2,371	2,134	25	1	7/1	3	41.67
Mercy Hospital ★[3,4]		H. Permar	13,502	3,732	3,545	29	2	9/1	1-3	.....
Montefiore Hospital ★[1,4]		Yardumian	6,395	2,021	1,404	37	1	7/1	1	50.00
Presbyterian Hospital ★[3,4]		R. Lacy	4,870	1,855	1,622	27	2	....	1-5	33.00
St. Francis Hospital ★[3]		J. Bruecken	11,418	5,776	1,712	25	2	....	3	100.00
Western Pennsylvania Hospital ★[1,4]		Graham	10,861	2,375	2,375	20	1	....	1	75.00
Reading Hospital ★[3,4]		D. Funk	9,936	2,587	1,882	60	1	....	1-3	50.00
Robert Packer Hospital ★[1]	Sayre, Pa.	C. H. DeWan	9,160	5,732	1,864	47	1	7/1	1-3	150.00
Williamsport Hospital ★[3]	Williamsport, Pa.	M. G. Colvin	9,160	1,938[b]	1,094[b]	31	1	....	1	.....
Rhode Island Hospital ★[3]	Providence, R. I.	B. E. Clarke	10,727	5,589	5,589	75	2	7/1	1-4	50.00
Roper Hospital ★[3]	Charleston, S. C.	K. M. Lynch	10,193	2,732	2,732	42	3	7/1	1-3	.....
John Gaston Hospital ★[3]	Memphis, Tenn.	D. H. Sprunt	16,602	5,543	2,806	56	6	7/1	1	32.50
St. Joseph Hospital ★[1]	Memphis, Tenn.	T. C. Moss	10,932	5,249	3,758	34	1	7/1	1	.....
Nashville General Hospital ★[1,4]	Nashville, Tenn.	W. A. DeMonbreum	5,965	898[b]	877[b]	30	2	....	1	.....
Vanderbilt University Hospital ★[4]	Nashville, Tenn.	E. W. Goodpasture	8,145	.....	.....	60	3	....	1	.....
Baylor University Hospital ★[3,4]	Dallas, Texas	J. M. Hill	15,376	21,577	13,696	30	5	7/1	1-3	50.00
Parkland Hospital ★[1,4]	Dallas, Texas	C. T. Ashworth	9,411	2,457	2,249	41	1	....	1	.....
St. Paul's Hospital ★[3]	Dallas, Texas	J. L. Goforth	13,647	6,696	4,746	25	2	7/1	1-3	50.00
John Sealy Hospital ★[3]	Galveston, Texas	P. Brindley	8,540	2,265	1,941	62	2	....	1-3	50.00
Jefferson Davis Hospital ★[4]	Houston, Texas	W. W. Coulter Sr.	11,480	1,734	1,758	23	1	1/1	1	50.00
Santa Rosa Hospital ★[3]	San Antonio, Texas	J. M. Moore and R. S. Bohls	12,539	6,810	5,487	22	1	3/1, 9/1	1-3	200.00
Salt Lake County General Hospital ★[3]	Salt Lake City	F. Gunn	3,853	748[b]	748[b]	65	1	....	1-3	.....
Mary Fletcher Hospital ★[3,4]	Burlington, Vt.	B. Pearson	5,411	1,186	1,174	59	3	7/1	1-3	.....
Norfolk General Hospital ★[3]	Norfolk, Va.	L. J. Motyca	9,234	5,800	5,390	58	1	7/1	1-3	100.00
Med. College of Virginia Hospital Div. ★[3,4]	Richmond, Va.	F. L. Apperly	14,397	5,599	5,599	42	2	....	1	.....
Providence Hospital ★[3]	Seattle	D. G. Mason	11,649	3,230	1,895	46	1	7/1	1	100.00
Deaconess Hospital ★[3]	Spokane, Wash.	G. A. C. Snyder	8,171	3,547	2,800	43	1	....	3	150.00
Tacoma General Hospital ★[1]	Tacoma, Wash.	C. P. Larson	7,693	.....	.....	29	1	....	1	150.00
Charleston General Hospital ★[3]	Charleston, W. Va.	W. G. J. Putschar	10,377	2,259	2,167	48	2	....	1	.....
State of Wisconsin General Hospital ★[3,4]	Madison, Wis.	W. D. Stovall	12,037	3,110	3,089	64	3	7/1	3	25.00
Columbia Hospital ★[1,4]	Milwaukee	G. Ritchie	4,398	1,769	1,178	49	1	11/1	1-3	50.00
Milwaukee County Hospital ★[1,4]	Milwaukee	J. F. Kuzma	14,401	962	913	33	2	Varies	1-3	75.00
St. Joseph's Hospital ★	Milwaukee	W. A. D. Anderson	12,180	2,231	2,163	25	2	7/1	1-3	75.00
Gorgas Hospital ★[3]	Ancon, C. Z.	J. G. Bennett	16,083	1,990	1,950	63	1	7/1	1	250.00
Queen's Hospital ★[3]	Honolulu, Hawaii	S. Price	12,961	3,673	3,517	67	1	10/1	1-2	.....

Hospitals, 269; Assistant Residencies and Residencies, 619

Numerical and other references will be found on page 1375.

18. PEDIATRICS

The following services approved by the Council are accredited by the American Board of Pediatrics
(See footnotes 1 and 2 for number of years credit)

United States Navy.—Residencies available to medical officers, U. S. Navy.
†U. S. Naval Hospital ★[1]....................Chelsea, Mass.
U. S. Naval Hospital ★....................Philadelphia

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Children's Hospital [2,4]	Birmingham, Ala	A. A. Walker	1,797	4,861	58	30	2	7/1	1-2	$100.00
Jefferson and Hillman Hospitals ★[2,4]	Birmingham, Ala	A. A. Walker	2,116	3,632	104	30	2	7/1	1	30.00
Norwood Hospital ★[1,4]	Birmingham, Ala	S. P. Wainwright	932	7,902	21	10	1	....	1	.....
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company ★[1]	Fairfield, Ala	E. A. Harris	813	6,605	21	12	1	7/1	1-3	200.00
General Hospital of Fesno County ★[1,4]	Fresno, Calif	R. G. VanWagenen	747	1,324	63	28	1	....	1-2	205.00
California Babies' and Children's Hosp.[1,4]	Los Angeles	E. T. Hansen	377	13,340	1	1	1	7/1	1	200.00
Children's Hospital [2,4]	Los Angeles	E. Fish	1,741	39,210	122	103	9	....	1-2	.....
Los Angeles County Hospital ★[2,4]	Los Angeles	E. F. Patton	4,036	3,058	164	81	5	Varies	2	157.20
White Memorial Hospital ★[1,4]	Los Angeles	M. B. Brooks	324	9,031	..	..	6	....	1-3	135.00
Children's Hospital of the East Bay [2,4]	Oakland, Calif	G. Sweet	2,970	20,828	21	49	6	Varies	1-2	150.00
Children's Hospital ★[2,4]	San Francisco	C. F. Gelston	522	3,360	9	11	2	7/1	1-2	50.00
†Franklin Hospital ★[1,4]	San Francisco	C. Bost	781	.....	5	5	1	7/1	1	100.00
St. Mary's Hospital ★[1]	San Francisco	J. M. Rector	.....	.....	..	..	1	10/1	1	100.00
San Francisco Hospital ★[4]	San Francisco	M. B. Olney	633	.....	24	5	2	....	1	290.00
Stanford University Hospitals ★[2,4]	San Francisco	H. K. Faber	530	17,220	24	18	6	7/1	1-2	50.00
University of California Hospital ★[2,4]	San Francisco	F. S. Smyth	607	11,032	46	38	4	7/1	1	50.00
Childrens Hospital [2,4]	Denver	W. W. Barber	.....	.....	..	..	10	7/1	1	50.00
†Colorado General Hospital ★[2,4]	Denver	H. H. Gordon	332	2,371	21	18	3	7/1	1-3	85.00
Denver General Hospital ★[1]	Denver	W. Jones	1,771	6,504	33	20	2	4/1, 10/1	1-2	50.00
†Hartford Hospital ★[1]	Hartford, Conn	E. Caulfield	692	.....	27	16	2	7/1	1-2	50.00
Grace-New Haven Community Hospital New Haven Unit ★[2,4]	New Haven, Conn	G. Powers	2,478	12,133	..	..	4	7/1	1	40.00
Hospital of St. Raphael ★[1]	New Haven, Conn	W. C. McGuire	1,550	178	16	10	1	7/1	1	75.00
†Delaware Hospital ★[1]	Wilmington, Del.	C. E. Wagner	270	318	22	16	1	7/1	1	125.00
Children's Hospital [2,4]	Washington, D. C.	J. S. Wall	6,889	51,458	271	218	22	1/1	1-3	40.00
Freedmen's Hospital ★[2,4]	Washington, D. C.	R. B. Scott	2,518	1,796	125	33	2	7/1	1	75.00
Gallinger Municipal Hospital ★[2,4]	Washington, D. C.	L. K. Sweet	1,004	7,910	45	20	10	7/1	1-3	75.00
Grady Memorial Hospital ★[2]	Atlanta, Ga	R. W. Dickson	1,006	25,670	73	35	6	7/1	1	20.00
Henrietta Egleston Hosp. for Children [2,4]	Atlanta, Ga	M. H. Roberts	.....	.....	..	..	2	1/1	1	50.00
University Hospital ★[1]	Augusta, Ga	P. Mulherin	1,101	1,411	72	12	3	7/1	1-2	40.00
Children's Memorial Hospital [2,4]	Chicago	S. Gibson	4,047	47,390	106	97	16	1/1, 7/1	1	.....
Cook County Hospital ★[2,4]	Chicago	A. H. Parmalee	7,103	.....	345	289	11	Varies	1-3	.....
Mercy Hospital-Loyola Univ. Clinics ★[1,4]	Chicago	H. W. Elghammer	1,336	1,944	16	11	1	7/1	1-2	25.00
Michael Reese Hospital ★[2,4]	Chicago	J. Calvin	3,595	4,607	..	..	7	....	1-3	25.00
†Mount Sinai Hospital ★[1,4]	Chicago	A. Levinson	612	803	9	5	1	7/1	1	50.00
Presbyterian Hospital ★[2,4]	Chicago	H. N. Sanford	1,140	3,192	43	37	2	7/1	1-2	25.00
Provident Hospital ★[2,4]	Chicago	E. W. Beasley	293	3,668	17	15	1	....	1	.....
Research and Educational Hospitals ★[2,4]	Chicago	H. G. Poncher	278	4,936	21	..	3	7/1	1-2	55.00
†St. Joseph Hospital ★[1]	Chicago	A. L. Hoyne	708	.....	20	12	1	....	1	.....
St. Luke's Hospital ★[2,4]	Chicago	A. D. Biggs	388	5,722	13	10	2	7/1	1-3	25.00
St. Vincent's Infant and Maternity Hosp.[1,4]	Chicago	L. W. Sauer	930	.....	5	4	2	....	1	.....
University of Chicago Clinics ★[2,4]	Chicago	F. H. Wright	1,091	21,654	29	25	7	7/1	1-3	25.00
Little Company of Mary Hospital ★[1]	Evergreen Park, Ill	E. Lawler	1,641	.....	17	6	1	1/1	1	100.00
Indianapolis City Hospital ★[1,4]	Indianapolis	J. C. Carter	554	5,075	107	35	1	....	1	.....
Indiana University Medical Center ★[2,4]	Indianapolis	M. Winters	1,865	5,029	145	91	4	....	1-2	33.33
†Iowa Methodist Hospital (Raymond Blank Memorial Hospital for Children) ★[2]	Des Moines, Iowa	L. F. Hill	4,077[b]	950[b]	..	..	2	Varies	1	.....
University Hospitals ★[2,4]	Iowa City	B. C. Jeans	1,138	2,886	39	26	5	7/1	1	40.00
University of Kansas Hospitals ★[2,4]	Kansas City, Kan	F. Neff	618	3,451	36	24	1	....	1	.....
Louisville General Hospital ★[2,4]	Louisville, Ky	J. W. Bruce	2,668	8,429	208	77	7	4/1	1-4	45.00
†St. Joseph Infirmary ★[1]	Louisville, Ky	H. Andrews	3,204	.....	26	9	2	7/1	1	75.00
Charity Hospital of Louisiana ★[2,4]	New Orleans		2,792	21,058	149	75	16	7/1	1-2	25.00
Touro Infirmary ★[2]	New Orleans	J. Graubarth	401	4,195	12	8	1	7/1	1	17.50
†Shreveport Charity Hospital ★	Shreveport, La	C. Webb	1,338	.....	55	25	2	7/1	1-3	60.00
†Central Maine General Hospital ★[1]	Lewiston, Maine	G. L. Brooks	1,492	.....	12	6	1	7/1	1	50.00
Baltimore City Hospitals ★[2,4]	Baltimore	H. E. Harrison	651	2,065	46	36	2	7/1	1	35.00
Johns Hopkins Hospital ★[2,4]	Baltimore	F. F. Schwentker	1,412	34,964	161	120	6	7/1	1+	.....
Union Memorial Hospital ★[1,4]	Baltimore	D. C. W. Smith	385[b]	1,806[b]	..	..	2	7/1	1	.....
University Hospital ★[1,4]	Baltimore	C. L. Joslin	636	8,885	119	79	6	7/1	1-2	.....
Boston City Hospital ★[2,4]	Boston	M. L. English	3,731	6,749	158	25	1	....	1-2	50.00
Boston Floating Hospital [2,4]	Boston	J. M. Baty	1,177[b]	.....	..	..	6	4/1, 7/1	1	25.00
Children's Hospital ★[2,4]	Boston		.....	.....	..	..	6	....	1	.....
Massachusetts General Hospital ★[2]	Boston	A. M. Butler	667	5,024	26	17	7	7/1	1-3	41.67
University Hospital ★[2,4]	Ann Arbor, Mich	J. L. Wilson	1,256	8,653	54	36	20	....	1	.....
Children's Hospital [2,4]	Detroit	P. V. Woolley	3,631	19,449	275	168	19	7/1	1	50.00
†Harper Hospital ★[1]	Detroit	D. J. Barnes	4,218[b]	.....	..	..	2	....	1	.....
Henry Ford Hospital ★[2,4]	Detroit	J. A. Johnston	1,831	19,713	29	14	5	7/1	1-2	200.00
Providence Hospital ★[1]	Detroit	L. P. Sonda	5,634	.....	99	71	1	....	1	.....
St. Mary's Hospital ★[1]	Duluth, Minn	R. E. Nutting	1,916	.....	42	39	3	....	1	.....
Minneapolis General Hospital ★[2,4]	Minneapolis	A. V. Stoesser	2,899	2,369	90	55	6	1/1, 7/1	1-3	100 00
†Northwestern Hospital ★	Minneapolis	E. S. Platou	2,077	.....	31	26	2	1/1	1	50.00
†St. Barnabas Hospital ★[1]	Minneapolis	L. F. Richdorf	747	.....	5	4	1	....	1	.....
University Hospitals ★[2,4]	Minneapolis	I. McQuarrie	212	3,252	68	43	13	7/1	1-3	100.00
Mayo Foundation [2]	Rochester, Minn	H. F. Helmholz	(See page 1375)				12	....	1	.....
Children's Mercy Hospital [1,4]	Kansas City, Mo	C. B. Summers	1,484	9,569	61	34	4	7/1	1-2	50.00
Kansas City General Hospital No. 1 ★[1]	Kansas City, Mo	D. Walthal	1,866	5,296	57	35	3	7/1	2-3	50.00
Homer G. Phillips Hospital ★[2,4]	St. Louis	P. J. White	1,869	3,825	80	17	3	7/1	1	50.00
†Jewish Hospital ★[1,4]	St. Louis	A. A. Margulis	789	.....	8	6	1	....	1	.....
St. Louis Children's Hospital [2,4]	St. Louis	A. F. Hartmann	2,938	.....	144	95	6	7/1	1	.....
St. Louis City Hospital ★[2,4]	St. Louis	A. F. Hartmann	1,336	2,783	116	65	7	7/1	1	86.00
St. Mary's Group of Hospitals ★[2]	Boston	S. Tartakoff	1,687	13,788	43	26	5	Varies	3	35.00
†Creighton Memorial St. Joseph Hosp. ★[1,4]	Omaha	J. H. Murphy	1,638	2,763	23	9	1	7/1	1-2	100.00
Jersey City Hospital ★[1,4]	Jersey City, N. J.	C. P. DeFuccio	1,885	6,588	43	14	2	Varies	1-2	35.00
†Babies Hospital, Colt Memorial [1]	Newark, N. J.	E. L. Minard	1,946	2,668	53	19	1	7/1	1	100.00
†St. Michael's Hospital ★[1]	Newark, N. J.	H. A. Murray	1,433	523	28	16	1	6/1	1	150.00
Albany Hospital ★[2,4]	Albany, N. Y.	O. A. Faust	736	.....	37	26	3	7/1	1	41.67
†Beth-El Hospital ★[1]	Brooklyn	A. Litvak	3,398	1,203	16	8	3	7/1	1-2	100.00
†Brooklyn Hospital ★[1]	Brooklyn	H. A. Naumer	454	5,429	28	14	2	7/1	1-2	25.00
Cumberland Hospital ★[1,4]	Brooklyn	T. B. Givan	1,558	3,180	45	32	2	7/1	1	70.00
Jewish Hospital ★[2,4]	Brooklyn	B. Kramer	679	9,920	49	31	6	Varies	1	30.00
Kings County Hospital ★[2,4]	Brooklyn	G. Brockway and L. Krahulik	4,748	3,597	158	62	4	7/1	1-2	70.00
Long Island College Hospital ★[2,4]	Brooklyn	C. A. Weymuller	612	7,314	31	14	4	7/1	1-2	25.00
†Methodist Hospital ★	Brooklyn	W. F. Watton	.....	2,522	41	8	1	7/1	1	25.00

Numerical and other references will be found on page 1375.

18. PEDIATRICS—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Norwegian Lutheran Deaconesses' Home and Hospital *[4]	Brooklyn	J. A. Monfort and T. B. Givan	.....	.....	..	..	1	....	1	.....
†St. Mary's Hospital *	Brooklyn		629	339	16	7	1	....	1	.....
Children's Hospital [2,4]	Buffalo	M. I. Rubin	2,213	.....	112	74	7	1/1, 7/1	1	25.00
Edward J. Meyer Memorial Hospital *[1,4]	Buffalo	F. J. Gustina	1,512	4,004	62	23	3	7/1	4	100.00
Queens General Hospital *[2,4]	Jamaica, N. Y.	H. A. Reisman	1,294	2,000	51	44	6	....	1-2	70.00
Bellevue Hosp. Div. III—N. Y. Univ. *[2,4]	New York City	L. E. Holt Jr.	1,651	23,650	130	62	5	7/1	1	45.00
†Beth Israel Hospital *[1,4]	New York City	J. M. Lewis and P. Cohen	317	2,111	12	5	1	1/1	1	50.00
Flower and Fifth Avenue Hospitals *[2,4]	New York City	R. Benson	2,431	3,475	14	7	4	7/1	1	.....
Fordham Hospital *[1]	New York City	J. Golomb	1,616	1,885	37	31	2	4/1	1	70.00
Harlem Hospital *[2,4]	New York City	M. Gleich	1,222	6,074	66	28	3	1/1, 7/1	1	70.00
Lenox Hill Hospital *[2,4]	New York City	H. Chaplin	511	5,918	12	8	1	7/1	1	50.00
Lincoln Hospital *[2,4]	New York City	A. T. Martin	1,003	4,254	43	30	3	1/1, 7/1	1	70.00
Metropolitan Hospital *[2,4]	New York City	R. A. Benson	1,158	4,670	65	46	4	1/1, 7/1	1	100.00
Morrisania City Hospital *[2,4]	New York City	L. H. Barenberg	913	1,483	33	19	2	7/1	1	70.00
Mount Sinai Hospital *[2,4]	New York City		.....	.....	..	..	5	....	1	50.00
New York City Hospital *[2,4]	New York City	C. E. Boyd	730	3,813	43	39	2	7/1	1	70.00
New York Hospital *[2,4]	New York City	S. Z. Levine	1,207	34,169	90	82	6	7/1	1-5	25.00
†New York Infirmary *[1]	New York City	R. Bakwin	224	4,016	6	3	1	7/1	1	75.00
New York Post-Graduate Medical School and Hospital *[2,4]	New York City	A. DeSanctis	751	12,825	38	25	6	7/1	1	30.00
Presbyterian Hospital *[2,4]	New York City	R. McIntosh	3,815	34,270	122	..	16	....	1+	41.66
†Roosevelt Hospital *[1]	New York City	A. T. Martin	521	2,019	6	3	1	7/1	1	25.00
†St. Clare's Hospital *	New York City	C. H. O'Regan	2,283	4,862	9	6	3	1/1	1	25.00
St. Luke's Hospital *[2,4]	New York City	H. F. Jackson	307	5,822	13	5	3	Varies	1-3	50.00
St. Vincent's Hospital *[1,4]	New York City	S. Brady	1,138	5,202	31	16	2	7/1	1-3	50.00
Genesee Hospital *[1,4]	Rochester, N. Y.	J. Aikman	428	.....	11	7	1	....	1	.....
†Rochester General Hospital *[1,4]	Rochester, N. Y.	F. W. Bush	522	1,149	14	11	1	7/1	1	85.00
Strong Memorial and Rochester Municipal Hospitals *[2,4]	Rochester, N. Y.	S. W. Clausen	1,300	8,271	70	30	7	7/1	1-4	41.66
†St. Vincent's Hospital *[1]	Staten Island, N. Y.	G. W. McCormick	2,791	230	25	14	1	7/1	1	50.00
Sea View Hospital [1,4]	Staten Island, N. Y.	B. Ratner	380	.....	6	2	6	1/1, 7/1	1	120.00
Syracuse Memorial Hospital *[2,4]	Syracuse, N. Y.	B. C. Doust	774	.....	17	6	4	7/1	1-2	.....
Grasslands Hospital *[4]	Valhalla, N. Y.	F. D. Barnes	413	917	17	10	2	7/1	1-3	75.00
Charlotte Memorial Hospital *[1,4]	Charlotte, N. C.	C. H. Gay	670	3,497	31	13	1	1/1	1-2	75.00
†Presbyterian Hospital [1]	Charlotte, N. C.	R. A. Moore	863	.....	7	..	1	....	1	.....
Duke Hospital *[2,4]	Durham, N. C.	W. C. Davison	2,179	9,086	73	40	3	7/1	1	.....
Watts Hospital *[2]	Durham, N. C.	A. H. London	819	218	14	2	3	7/1	1	75.00
†Sternberger Hospital for Women and Children [1]	Greensboro, N. C.	S. F. Ravenel	.....	.....	..	..	1	....	1	.....
†Rex Hospital *[1,4]	Raleigh, N. C.	A. S. Root	2,202	457	22	5	1	4/1	1	150.00
Babies Hospital [1,4]	Wilmington, N. C.	J. B. Sidbury	1,223	.....	37	5	2	1/1, 7/1	..	100.00
†James Walker [illegible]	Wilmington, N. C.	J. B. Sidbury	2,919	.....	67	14	1	7/1	1	75.00
North Carolina [illegible]	Winston-Salem, N. C.	D. J. Butler	462	1,484	20	13	3	....	1-3	.....
Trinity Hospital *[1,9]	Minot, N. D.		.....	.....	..	..	1	....	1	.....
Children's Hospital	Akron, Ohio		3,402	1,011	70	41	2	7/1	1-2	100.00
Children's Hospital [2,4]	Cincinnati	A. A. Weech	6,577	21,529	130	79	16	7/1	1-2	35.00
Cincinnati General Hospital *[2,4]	Cincinnati	A. A. Weech	1,015	7,457	126	62	16	7/1	1-2	.....
University Hospitals *[2,4]	Cleveland	C. F. McKhann	1,660	14,618	76	58	10	7/1	1	25.00
Children's Hospital [2,4]	Columbus, Ohio	E. H. Baxter	1,658	5,401	..	..	8	1/1, 7/1	1	60.00
University Hospitals *[2,4]	Oklahoma City	C. H. Hall	911	3,628	81	30	3	7/1	1-2	35.00
†Hillcrest Memorial Hospital *[1]	Tulsa, Okla	H. Graham	2,837	.....	73	19	5	7/1	1	75.00
University of Oregon Medical School Hospitals and Clinics *[2,4]	Portland, Ore.	J. B. Bilderback	1,047	4,504	60	47	3	7/1	2	75.00
†Abington Memorial Hospital *[1]	Abington, Pa	T. S. Wilder	2,180	2,620	13	12	1	5/1	1	50.00
Babies' Hospital [1,4]	Philadelphia	J. F. Sinclair	259	23,762	7	3	2	1/1	1	83.33
Children's Hospital [2,4]	Philadelphia	J. Stokes Jr.	2,498	32,807	88	65	13	7/1	1	41.67
Children's Hospital of the Mary J. Drexel Home [1,4]	Philadelphia	J. M. Lyon	1,000	8,918	7	4	1	7/1	1	125.00
†Germantown Dispensary and Hospital *[1]	Philadelphia	P. S. Barba	1,062	623	18	8	1	7/1	1-2	50.00
†Graduate Hospital of the University of Pennsylvania *[1]	Philadelphia	J. Scott	128	222	3	2	1	7/1	1-2	.....
Hahnemann Hospital *[1,4]	Philadelphia	C. C. Fischer	945	4,275	36	25	1	....	1	.....
Hospital of the Univ. of Pennsylvania *[2,4]	Philadelphia	J. Stokes Jr.	509	3,886	42	35	4	Varies	1-3	.....
†Hosp. of the Women's Med. Coll of Pa. *[2]	Philadelphia	E. P. Bacon	1,091	2,078	7	5	1	7/1	1	.....
Jefferson Medical College Hospital *[1]	Philadelphia	E. L. Bauer	691	8,287	58	26	2	....	1	.....
Jewish Hospital *[1,4]	Philadelphia	S. Goldberg	653	.....	13	9	2	7/1	1-2	50.00
Philadelphia G [illegible]	Philadelphia		1,146	.....	67	..	2	....	1-3	70.00
St. Christopher [illegible]	Philadelphia	R. J. Tyson	.....	.....	..	..	7	....	1	.....
†St. Luke's and [illegible]	Philadelphia	J. L. Redman	375	.....	25	7	1	6/1	1	125.00
Temple Univers [illegible]	Philadelphia	W. E. Nelson	426	5,117	60	57	7	7/1	3	50.00
Children's Hospital [2,4]	Pittsburgh		.....	.....	..	..	10	7/1	1-3	75.00
†Western Pennsylvania Hospital *[1]	Pittsburgh	H. C. Flood	1,620	476	21	8	1	....	1	75.00
†Charles V. Chapin Hospital [1]	Providence, R. I.	H. G. Calder	957	311	28	22	3	Varies	1	.....
†Rhode Island Hospital *[1]	Providence, R. I.	W. P. Buffum	887	2,259	45	26	1	7/1	1	100.00
Roper Hospital *[2,4]	Charleston, S. C.	M. W. Beach	779	4,747	55	27	5	7/1	1-4	25.00
T. C. Thompson Children's Hospital [1]	Chattanooga, Tenn.	O. L. VonCanon	965	6,548	76	4	2	....	1	90.00
†Knoxville General Hospital *[1]	Knoxville, Tenn.	W. R. Cross	709	313	64	15	1	7/1	1	60.00
John Gaston Hospital *[2]	Memphis, Tenn.	F. T. Mitchell	1,866	5,385	131	74	6	7/1	1	32.50
†Methodist Hospital *	Memphis, Tenn.	C. V. Croswell	4,513	.....	50	16	1	7/1	1	150.00
†St. Joseph Hospital *[2]	Memphis, Tenn.	G. J. Levy	2,846	761	106	30	1	7/1	1	.....
George W. Hubbard Hospital of Meharry Medical College *[2,4]	Nashville, Tenn.	W. P. Hardy	195	3,609	31	8	2	7/1	1-3	75.00
Vanderbilt University Hospital *[2,4]	Nashville, Tenn.		704	11,193	97	74	5	7/1	1	.....
Children's Medical Center [2,4]	Dallas, Texas		2,667	11,988	117	39	12	7/1	1-3	50.00
†Parkland Hospital *[1]	Dallas, Texas		1,668[b]	.....	..	..	2	....	1	.....
John Sealy Hospital *[2,4]	Galveston, Texas	A. E. Hansen	632	10,077	62	37	9	....	1-3	50.00
†Hermann Hospital *[1,4]	Houston, Texas	J. H. Park	443	3,656	30	23	2	7/1	1-3	50.00
Jefferson Davis Hospital *[1,4]	Houston, Texas	H. S. Meyer	1,088[b]	4,606[b]	..	..	1	7/1	1	50.00
Salt Lake County General Hospital *[2,4]	Salt Lake City	J. Anderson	469	2,896	18	22	2	7/1	1	25.00
†Mary Fletcher Hospital *[1]	Burlington, Vt.	S. S. Corbin	885	301	11	9	2	7/1	1	.....
University of Virginia Hospital *[2,4]	Charlottesville, Va.	W. W. Waddell	689	5,288	71	26	3	7/1	1-4	62.00
Medical College of Virginia, Hosp. Div. *[2,4]	Richmond, Va.	L. H. Sutton	1,399	6,143	56	17	5	7/1	1	46.50
Children's Orthopedic Hospital [1,4]	Seattle	J. I. Durand	1,036	17,179	44	35	1	....	1	.....
State of Wisconsin General Hospital *[2,4]	Madison, Wis.	J. E. Gonce Jr.	711	3,723	30	18	2	7/1	3	25.00
Milwaukee Children's Hospital [2,4]	Milwaukee	F. R. Janney	5,043	25,471	76	43	6	7/1	1	75.00
Milwaukee County Hospital *[2,4]	Milwaukee	B. J. Mainekoff	1,098	2,893	6	1	2	Varies	1-3	75.00

Hospitals, 180; Assistant Residencies and Residencies, 717

Numerical and other references will be found on page 1375.

19. PHYSICAL MEDICINE

United States Army.—Residencies available to medical officers, U. S. Army.

†Letterman General Hospital ★	San Francisco
†Fitzsimons General Hosptial ★	Denver
Walter Reed General Hospital ★	Washington, D. C.
†Percy Jones General Hospital ★	Battle Creek, Mich.

Name of Hospital	Location	Chief of Service	Patients Treated	Number of Treatments	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Los Angeles County Hospital ★[4]	Los Angeles	O. Huddelston	.....	97,205	1	Varies	..	$157.20
†White Memorial Hospital ★	Los Angeles	F. B. Moor	500	20,000	2	7/1	3	32.00
Stanford University Hospitals ★[4]	San Francisco	W. H. Northway	.....	6,409	2	7/1	1-2	50.00
†University of California Hospital ★[4]	San Francisco	F. Baker	.....	7,123	1	7/1	1	50.00
†Colorado General Hospital ★[4]	Denver	H. Dinken	13,471	34,303	3	7/1	1-3	85.00
Michael Reese Hospital ★[4]	Chicago	C. O. Molander	3,658	.....	2	....	1	25.00
Passavant Memorial Hospital ★[4]	Chicago	J. S. Coulter	7,781	12,696	2[h]	....	1	.....
†Veterans Administration Hospital	Hines, Ill.	L. B. Newman	.....	193,000	3	9/1	1	275.00
University of Kansas Hospitals ★	Kansas City, Kan.	G. M. Martin	.....	.....	3	....	1½	.....
†Massachusetts General Hospital ★	Boston	A. L. Watkins	1,639	16,265	2	....	1-3	41.67
†University Hospitals ★[4]	Minneapolis	M. Knapp	8,264	13,343	2	7/1	1-3	100.00
Mayo Foundation	Rochester, Minn.	F. H. Krusen	(See page 1375)		6	....	1	.....
†Goldwater Memorial Hospital ★[4]	New York City	H. Behrend	873	61,648	1	7/1	1	50.00
†Hospital for Joint Diseases ★[4]	New York City	J. Weiss	.....	100,502	2	9/1	1+	40.00
†Montefiore Hospital for Chronic Diseases ★[4]	New York City	K. Harpuder	.....	.....	1	....	1+	.....
†Mount Sinai Hospital ★[4]	New York City	W. Bierman	6,497	8,283	1	1/1, 7/1	1	50.00
†Presbyterian Hospital ★[4]	New York City	W. B. Snow	89,419	174,650	1	....	1	41.66
St. Luke's Hospital ★	New York City	R. Muller	23,363	96,757	1	....	1	.....
†Veterans Administration Hospital	New York City	....	.....	.....	3	....	1	.....
†Cleveland Clinic Foundation Hospital [4]	Cleveland	W. J. Zeiter	19,221	38,033	1	7/1	1-3	100.00
†Veterans Administration Hospital	Portland, Ore.	M. C. Riddle	.....	.....	3	....	2	275.00
†Hospital of the Univ. of Pennsylvania ★[4]	Philadelphia	G. M. Piersol	1,239	23,345	1	Varies	1	.....
†Medical College of Virginia, Hosp. Div. ★	Richmond, Va.	....	2,705	25,680	1	....	1	46.50
†State of Wisconsin General Hospital ★[4]	Madison, Wis.	H. D. Bouman	1,276	32,617	2	....	1	.....

Hospitals, 24; Assistant Residencies and Residencies, 45

20. PLASTIC SURGERY

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Veterans Administration Hospital	Hines, Ill.	P. W. Greeley	491	.....	..	..	2	1/1	1-3	$300.00
†University of Kansas Hospitals ★	Kansas, City, Kan.	E. C. Padgett	227	.....	..	..	2	....	2-4	.....
†Charity Hospital of Louisiana ★[4]	New Orleans	....	(Included in Surgery)				3	7/1	1-3	75.00
†Blodgett Memorial Hospital ★	Grand Rapids, Mich.	F. Smith	527	.....	..	..	2	7/1	1-3	175.00
Mayo Foundation	Rochester, Minn.	G. B. New	(See page 1375)				4	....	3	.....
Barnes Hospital ★	St. Louis	J. B. Brown	1,049	.....	6	3	6	7/1	1-3	25.00
Hospital of St. Barnabas and for Women and Children ★	Newark, N. J.	L. A. Peer	410	1,200	1	1	2	....	1	.....
Kings County Hospital ★	Brooklyn	W. A. Conkley	(Incl. in Surgery)		35	3	2	7/1	2	70.00
†New York Post-Graduate Medical School and Hospital ★[4]	New York City	G. Aufricht	134	927	..	..	2	1/1, 7/1	2	None
Presbyterian Hospital ★[4]	New York City	....	.....	.....	..	..	4	....	2	100.00
†Veterans Administration Hospital	New York City	H. Conway	240	.....	..	..	4	7/1	1-4	303.00
Strong Memorial-Rochester Municipal Hospitals ★	Rochester, N. Y.	F. O. J. Young	176	217	..	..	2	7/1	1-3	.....
†University Hospitals ★	Oklahoma City	J. F. Burton	190	583	9	2	2	7/1	1-2	35.00
Graduate Hospital of the University of Pennsylvania ★	Philadelphia	R. H. Ivy	220	179	1	1	1	7/1	1-2	.....
†Jefferson Medical College Hospital ★	Philadelphia	W. B. Davis	522	16	3	..	2	....	1-3	.....
†State of Wisconsin General Hospital ★[4]	Madison, Wis.	W. B. Slaughter	239	486	..	..	2	1/1, 7/1	1-3	25.00

Hospitals, 16; Assistant Residencies and Residencies, 42

21. PROCTOLOGY

United States Navy.—Residencies available to medical officers, U. S. Navy.

†U. S. Naval Hospital ★	Oakland, Calif.

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Mercy Hospital-Loyola University Clinics ★	Chicago	O. L. Martin	399	.....	2	2	1	7/1	1	$ 75.00
†U. S. Marine Hospital ★	Baltimore	....	.....	.....	..	..	1	7/1	1-4	176.66
†City of Detroit Receiving Hospital ★[4]	Detroit	H. I. Kallet	163	859	6	..	1	4/1	1+	100.00
Mayo Foundation	Rochester, Minn.	L. A. Buie	(See page 1375)				8	....	1	.....
†Millard Fillmore Hospital ★	Buffalo	....	431	.....	9	..	1	7/1	1-4	50.00
†Youngstown Hospital ★	Youngstown, Ohio	P. J. Fuzy	327	.....	5	1	4	7/1	1-3	100.00
†Allentown Hospital ★[4]	Allentown, Pa.	M. L. Kleckner	457	31	23	8	3	....	1	.....
†Jefferson Medical College Hospital ★	Philadelphia	B. F. Haskell	352	2,188	11	1	1	7/1	1-3	.....
†Presbyterian Hospital ★[4]	Pittsburgh	K. Zimmerman	417	516	21	17	5	Varies	1-5	33.00
†Reading Hospital ★[4]	Reading, Pa.	F. G. Runyeon	433	151	8	5	8	7/1	1	125.00
†Milwaukee County Hospital ★[4]	Milwaukee	A. G. Schutte	415	642	2	1	1	Varies	1-3	75.00

Hospitals, 11; Assistant Residencies and Residencies, 34

Numerical and other references will be found on page 1375.

22. PSYCHIATRY

The following services are approved by the Council and the American Board of Psychiatry and Neurology
(See footnotes 1, 2 and 3 for number of years credit)

United States Army.—Residencies available to medical officers, U. S. Army.
†Letterman General Hospital★[3]....................San Francisco
†Walter Reed General Hospital★[2]....................Washington, D. C.
†Brooke General Hospital★[2]....................San Antonio, Texas
†Madigan General Hospital★[1]....................Fort Lewis, Wash.

United States Navy.—Residencies available to medical officers, U. S. Navy.
†U. S. Naval Hospital★[1]....................Great Lakes, Ill.
†U. S. Naval Hospital★[1]....................Bethesda, Md.
†U. S. Naval Hospital★[1]....................Philadelphia
†U. S. Naval Hospital★[1]....................Portsmouth, Va.

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Veterans Administration Hospital[3]	N. Little Rock, Ark.	C. N. Baganz	2,103	10,431	..	..	15	1/1, 7/1	1-3	$275.00
Compton Sanitarium[1,4]	Compton, Calif.	G. E. Meyers	761	.....	10	1	4	Varies	1	150.00
†Napa State Hospital[1,4]	Imola, Calif.	W. A. Oliver	6,532	350	601	63	2	Varies	1	125.00
Livermore Sanitarium[3]	Livermore, Calif.	C. W. Mack	881	.....	6	..	1	1/1	1	250.00
Los Angeles County Hospital★[2,4]	Los Angeles	M. G. Carter	5,484	.....	73	12	1	Varies	1	157.20
†Veterans Administration Hospital[1]	Palo Alto, Calif.	R. M. Fellows	2,058	1,488	97	12	20	Varies	1-5	275.00
Langley-Porter Clinic[2,4]	San Francisco	K. M. Bowman	631	14,732	..	..	20	Varies	1-3	240.00
Mount Zion Hospital★[2]	San Francisco	N. Reider	36	963	..	..	3	7/1	1	75.00
Stanford University Hospitals★[2,4,7]	San Francisco	G. S. Johnson	512	3,507	4	1	5	7/1	1-2	50.00
University of California Hospital★[2,4]	San Francisco	K. M. Bowman	30	2,646	..	..	1	7/1	1	50.00
Mendocino State Hospital[2,4]	Talmage, Calif.	W. Rapaport	3,747	.....	115	27	2	....	1	.....
†Veterans Administration Center[3]	W. Los Angeles, Calif.	R. L. Harris	2,577	.....	114	..	25	8/1	3	275.00
Colorado Psychopathic Hospital[2,4]	Denver	F. G. Ebaugh	883	6,027	25	16	16	7/1	1-3	125.00
Colorado State Hospital[2,4]	Pueblo, Colo.	F. H. Zimmerman	5,193	.....	309	149	10	....	1	275.00
Institute of Living (Neuro-Psychiatric Institute of the Hartford Retreat)[2,4]	Hartford, Conn.	C. C. Burlingame	1,200	.....	12	2	0	....	1+	250.00
Connecticut State Hospital[2,4]	Middletown, Conn.	B. Simon	3,874	.....	246	71	3	Varies	1	190.00
Grace-New Haven Community Hospital New Haven Unit★[2,4]	New Haven, Conn.	W. T. Brown	353	2,143	..	..	9	7/1	1	40.00
†Fairfield State Hospital[1,4]	Newtown, Conn.	S. Friedman	3,184	21	215	52	4	Varies	1-3	200.00
Norwich State Hospital[2,4]	Norwich, Conn.	R. H. Guthrie	3,293	.....	255	47	6	....	1	190.00
Delaware State Hospital[2,4]	Farnhurst, Del.	M. A. Tarumianz	1,537	1,006	100	26	6	1/1, 7/1	1-2	125.00
Gallinger Municipal Hospital★[1,4]	Washington, D. C.	J. F. Gilbert	3,782	.....	108	21	2	7/1	1-3	75.00
St. Elizabeths Hospital★[3,4]	Washington, D. C.	W. Overholser	8,912	.....	424	..	10	....	1	200.00
†University Hospital★[4]	Augusta, Ga.	H. Cleckley	376	1,400	2	1	1	....	1	.....
Chicago State Hospital[2,4]	Chicago	I. Spinka	6,250	2,967	657	93	7	1/1	1-3	150.00
Cook County Hospital★[2,4]	Chicago	O. A. Neymann	.....	.....	..	..	5	Varies	1-3	27.50
Illinois Neuropsychiatric Institute[2,4,7]	Chicago	F. J. Gerty	148	5,757	1	..	3	7/1	3	55.00
Michael Reese Hospital★[2,4,7]	Chicago	R. Grinker	250	3,978	..	..	10	....	1-3	.....
St. Luke's Hospital★[1,4]	Chicago	A. P. Solomon	276[b]	.....	..	..	1	7/1	1-3	25.00
University of Chicago Clinics★[2,4]	Chicago	H. Brosin	152	4,052	..	..	4	7/1	1-3	25.00
Veterans Rehabilitation Center[1,4]	Chicago	D. Slight	240	5,423	..	..	6	Varies	1	150.00
Wesley Memorial Hospital★[1,4]	Chicago	T. T. Stone	442	.....	1	..	1	1/1, 7/1	1-3	25.00
Elgin State Hospital[3,4]	Elgin, Ill.	E. Liebert	7,088	2,030	471	159	11	Varies	1-3	150.00
[illegible] Hospital[3]	Hines, Ill.	....	1,225	111,356	..	..	20	1/1	1-3	303.33
[illegible]ital[1,4]	Jacksonville, Ill.	....	8,178	1,537	319	11	5	Quarterly	1-3	.....
[illegible]l[1,4]	Kankakee, Ill.	A. Simon	5,000	9,000	351	58	4	1/1	1-3	150.00
[illegible][2,4]	Manteno, Ill.	M. Wallenberg	7,143	.....	573	125	5	Varies	1	150.00
Peoria State Hospital[2,4]	Peoria, Ill.	H. B. Knowles	3,558	.....	282	14	2	7/1	1	150.00
†North Shore Health Resort[1]	Winnetka, Ill.	S. Liebman	407	.....	7	4	2	Varies	1	50.00
Central State Hospital[2]	Indianapolis	M. A. Bahr	2,306	.....	200	15	4	....	1	.....
[illegible]	Indianapolis	D. L. Boyd	766	971	36	17	1	....	2	.....
[illegible]	Indianapolis	P. B. Reed	217	900	4	..	2	7/1	1-3	50.00
[illegible]	Logansport, Ind.	C. C. Chapin	2,250	.....	223	35	8	....	1	.....
†Veterans Administration Hospital[3]	Marion, Ind.	....	2,004	419	106	17	15	....	1-3	150.00
Iowa State Psychopathic Hospital[2,4]	Iowa City	W. R. Miller	336	1,037	1	1	5	4/1, 7/1	1	40.00
Menninger Sanitarium[3,4]	Topeka, Kan.	R. P. Knight	156	13,684	..	..	2	....	1-3	.....
†Veterans Administration Hospital[3]	Topeka, Kan.	J. F. Casey	671	1,075	13	9	125	1/1, 7/1	1-3	275.00
U. S. Public Health Service Hospital[2]	Lexington, Ky.	J. V. Lowry	1,856	.....	25	14	1	....	1	.....
†Veterans [illegible]	Lexington, Ky.	S. R. Baker	887	400	38	..	8	7/1	1-2	275.00
†Louisville [illegible]	Louisville, Ky.	W. E. Gardner	680	1,656	17	7	1	....	1	.....
†Veterans [illegible]	Louisville, Ky.	....	212	.....	80	47	18	1/1, 7/1	1-3	275.00
†Charity [illegible]	New Orleans	....	(See Neurology)				2	7/1	1-3	25.00
†DePaul Sanitarium[1,4]	New Orleans	H. O. Colomb	1,033	1,413	18	14	5	1/1, 6/1	1-3	75.00
Johns Hopkins Hospital★[3,4]	Baltimore	J. C. Whitehorn	268	4,795	2	1	4	7/1	1-4+	.....
†Seton Institute[2]	Baltimore	O. H. Rogerson	487	.....	31	..	3	Varies	1-3	125.00
Spring Grove St[illegible]	Catonsville, Md.	S. W. Weltmer	2,971	1,538	177	57	12	....	1	.....
†Chestnut Lodge	[illegible]	M. Bullard	100	600	4	1	4	Varies	1-2	175.00
Springfield State [illegible]	[illegible]	B. Jones	3,605	.....	212	38	10	....	1	220.00
Sheppard and Enoch Pratt Hospital[2,4]	[illegible]	McC. Chapman	366	166	10	7	8	3/1, 7/1	1-3	100.00
†Veterans [illegible][2]	Bedford, Mass.	....	2,302	.....	78	25	6	....	1-3	275.00
Boston [illegible]	Boston	H. C. Soloman	1,251	6,590	12	4	10	Varies	1-2	83.33
Boston [illegible]	Boston	E. V. Semrad	2,865	290	391	76	8	7/1	1-2	140.00
†Joseph H. Pratt Diagnostic Hospital[1]	Boston	M. E. Cohen	1,365	1,918	14	10	3	7/1	1-3	83.33
Massachusetts General Hospital★[2]	Boston	S. Cobb	175	2,591	..	..	7	....	1-3	41.67
†Peter Bent Brigham Hospital★[1]	Boston	H. M. Fox	.....	.....	..	..	2	9/1	1-2	125.00
†Veterans Administration Hospital[2]	Boston	S. Tartakoff	730	.....	141	58	4	4/1, 10/1	1	275.00
Foxboro State Hospital[2,4]	Foxboro, Mass.	R. B. Dexter	1,556	421	132	11	2	1/1, 4/1	1	100.00
†Veterans Administration Hospital[3]	Framingham, Mass.	W. Bloomberg	479	.....	3	3	24	3/1, 9/1	1-3	.....
Gardner State Hospital[2,4]	Gardner, Mass.	C. E. Thompson	1,785	562	87	16	9	....	1	200.00
Danvers State Hospital[2,4]	Hathorne, Mass.	S. Jacobs	3,062	1,050	289	37	2	....	1	140.00
Medfield State Hospital[2]	Medfield, Mass.	E. K. Holt	2,096	.....	154	10	2	....	1	.....
Northampton State Hospital[2,4]	Northampton, Mass.	L. W. Darrah	2,815	.....	223	12	10	Varies	1	.....
Grafton State Hospital[2,4]	North Grafton, Mass.	H. L. Paine	2,067	850	111	8	2	7/1	1	100.00
Monson State Hospital[1]	Palmer, Mass.	L. J. Robinson	1,560	.....	79	..	2[d]	1/1	1-2	100.00
Taunton State Hospital[2,4]	Taunton, Mass.	R. M. Chambers	2,484	1,758	269	112	7	7/1	1-3	200.00
Metropolitan State Hospital[1,4]	Waltham, Mass.	W. C. Gaebler	1,986	.....	231	89	2	....	1	140.00
McLean Hospital[2,4]	Waverley, Mass.	K. J. Tillotson	388	.....	14	1	8	4/1, 7/1	1	.....
Westboro State Hospital[2,4]	Westboro, Mass.	R. V. Hadley	2,155	.....	139	32	2	Varies	1-2	.....
Worcester State Hospital[3,4]	Worcester, Mass.	D. Rothschild	3,480	.....	270	35	10	....	1-3	.....
University Hospital★[3,4]	Ann Arbor, Mich.	R. W. Waggoner	454	3,675	3	2	15	Varies	1-3	101.40
City of Detroit Receiving Hospital★[1,4]	Detroit	J. Stanton	5,604	646	148	29	4	7/15	1+	149.67
Henry Ford Hospital★[2,4,7]	Detroit	T. J. Heldt	712	8,893	22	7	5	7/1	1-3	200.00
Wayne County General Hospital and Infirmary★[3,4]	Eloise, Mich.	L. S. Lipschutz	5,083	2,564	301	55	4	7/1	1-2	197.50
Kalamazoo State Hospital[2,4]	Kalamazoo, Mich.	R. A. Morter	4,524	1,916	313	10	5	....	1	.....
Pontiac State Hospital[2,4]	Pontiac, Mich.	P. V. Wagley	2,317	212	165	83	12	Varies	1-3	300.00
Traverse City State Hospital[2,4]	Traverse City, Mich.	M. M. Nickels	3,331	50	267	70	3	Varies	1-3+	300.00
Ypsilanti State Hospital[2,4]	Ypsilanti, Mich.	O. R. Yoder	3,987	417	244	66	6	....	1	.....

Numerical and other references will be found on page 1375.

23. PULMONARY DISEASES—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated [6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Nassau County Tuberculosis Hospital	Farmingdale, N. Y.	J. C. Walsh	462	7,300	56	0	4	7/1	1-2	150.00
Herman M. Biggs Memorial Hospital [4]	Ithaca, N. Y.	N. S. Lincoln	385	6,403	25	10	5	7/1	1	200.00
Triboro Hospital [4]	Jamaica, N. Y.	R. R. Bennett and H. M. Riggins	747	10,460	37	12	14	7/1	1	50.00
Mount Morris Tuberculosis Hospital [4]	Mount Morris, N. Y.	A. M. Stokes	271	6,741	28	16	4	7/1	1	208.33
Bellevue Hosp., Div. I—Columbia Univ. ★[4,10]	New York City	J. B. Amberson	3,067	11,069	389	98	14	1/1, 7/1	1	70.00
Lenox Hill Hospital ★[4]	New York City	G. Thorburn	85	1,864	6	1	1	7/1	1	50.00
Metropolitan Hospital ★[4]	New York City	G. G. Ornstein	465	4,817	211	18	8	Varies	1	100.00
Montefiore Hosp. for Chronic Diseases ★[4]	New York City	E. H. Rubin and M. M. Steinbach	270	.....	30	17	1	1/1, 7/1	1	50.00
St. Joseph Hosp. for Chest Diseases	New York City	F. J. McCarthy	718	.....	..	..	3	....	1	.....
Homer Folks Tuberculosis Hospital [4]	Oneonta, N. Y.	R. Horton	365	6,648	30	13	2	10/1	1	208.33
Municipal Sanatorium [4]	Otisville, N. Y.	J. S. Edlin	1,069	.....	..	..	7	1/1	1	.....
Ray Brook State Tuberculosis Hospital	Ray Brook, N. Y.	H. A. Bray	690	4,741	36	17	4	....	1	.....
Iola-Monroe County Tuberculosis Sanat. [4]	Rochester, N. Y.	E. Bridge	651	17,335	97	31	7	7/1	1	200.00
Schenectady County Tuberculosis Hospital [4]	Schenectady, N. Y.	J. M. Blake	231	2,900	31	2	2	7/1	1	100.00
Sea View Hospital [4]	Staten Island, N. Y.	J. J. Ornstein	2,581	.....	546	36	22	1/1, 7/1	1	120.00
Trudeau Sanatorium [4]	Trudeau, N. Y.	E. N. Packard	409	.....	6	3	5	Varies	1	25.00
Grasslands Hospital ★[4]	Valhalla, N. Y.	W. G. Childress	452	1,623	59	24	8	7/1	1-3	122.50
Jefferson County Sanatorium [4]	Watertown, N. Y.	S. E. Simpson	152	1,915	30	17	1	7/1	1-3	150.00
†Veterans Administration Hospital	Oteen, N. C.	P. H. Ringer	2,038	1,443	269	68	1	....	1	275.00
†Veterans Administration Hospital	Brecksville, Ohio	K. E. Kimber	200	.....	16	4	4	....	1	275.00
Dunham Hospital [4]	Cincinnati	H. J. Nimitz	930	2,352	189	40	6	....	1	.....
City Hospital ★[4]	Cleveland	R. C. McKay	855	.....	231	69	3	7/1	1	90.00
Franklin County Tuberculosis Hospital [4]	Columbus, Ohio	W. L. Potts	492	792	91	35	4	Varies	1	150.00
Sunny Acres, Cuyahoga County Tuberculosis Hospital [4]	Warrensville, Ohio	R. H. Browning	658	29,112	36	13	6	7/1	1+	230.00
Eagleville Sanatorium for Consumptives [4]	Eagleville, Pa.	A. J. Cohen	318	7,014	32	..	2	....	1	.....
Germantown Dispensary and Hospital ★	Philadelphia	F. M. McPhedran	.....	.....	..	..	1	7/1	1-2	50.00
White Haven Sanatorium [4]	White Haven, Pa.	L. J. Leavens	325[b]	.....	..	..	2	....	1	.....
State Sanatorium [4]	Wallum Lake, R. I.	U. E. Zambarano	705	4,274	98	15	2	Varies	1	.....
Pine Breeze Sanatorium	Chattanooga, Tenn.	J. L. Hamilton	409	2,669	69	1	1	Varies	1	.....
Davidson County Tuberculosis Hospital	Nashville, Tenn.	R. R. Crowe	457	5,280	52	14	2	7/1	1-3	150.00
†Oakville Memorial Sanatorium [4]	Oakville, Tenn.	F. H. Alley	476	29,667	116	32	2	7/1	1-3	150.00
†Veterans Administration Hospital [4]	McKinney, Texas	F. Reichsman	295	.....	12	7	2	Varies	1	275.00
Woodmen of the World Mem. Hospital	San Antonio, Texas	R. G. McCorkle	187	.....	15	5	1	9/1	1	.....
King County Tuberculosis Hospital	Seattle	P. H. Narodick	392	2,782	69	21	2	7/1	1-3	320.00
Hopemont Sanitarium [4]	Hopemont, W. Va.	D. Salkin	815	2,500	38	13	4	....	1-3	175.00
Muirdale Sanatorium [4]	Milwaukee	A. V. Cadden	907	.....	135	10	2	Varies	1-2	.....
Wisconsin State Sanatorium [4]	Statesan, Wis.	R. H. Schmidt Jr.	237	.....	15	5	2	Varies	1	260.00
†Leahi Hospital [4]	Honolulu, Hawaii	H. H. Walker	826	.....	87	40	6	Varies	1-2	200.00

Hospitals, 101; Assistant Residencies and Residencies, 360

24. RADIOLOGY

The following services are approved by the Council and the American Board of Radiology
(See footnotes 1, 2 and 3 for number of years credit)

United States Army.—Residencies available to medical officers, U. S. Army.

†Army and Navy General Hospital [1] (Rad.)..Hot Spgs. Nat. Pk., Ark.
Letterman General Hospital ★[2] (Rad.)............San Francisco
†Fitzsimons General Hospital ★[1] (Roent.)..........Denver
Walter Reed General Hospital ★[3] (Rad.)..........Washington, D. C.
†Oliver General Hospital ★[1] (D.R.)................Augusta, Ga.
†Percy Jones General Hospital ★[1] (Roent.)........Battle Creek, Mich.
†Brooke General Hospital ★[1] (Roent.)..............San Antonio, Texas

United States Navy.—Residencies available to medical officers, U. S. Navy.

†U. S. Naval Hospital ★[1] (Roent.)..................Long Beach, Calif.
†U. S. Naval Hospital ★[1] (Roent.)..................Oakland, Calif.
†U. S. Naval Hospital ★[3] (Rad.)...................San Diego, Calif.
†U. S. Naval Hospital ★[1] (Roent.)..................Great Lakes, Ill.
†U. S. Naval Hospital ★[1] (Roent.)..................Bethesda, Md.
†U. S. Naval Hospital ★[1] (Roent.)..................Chelsea, Mass.
U. S. Naval Hospital ★[2] (Roent.)..................St. Albans, N. Y.
†U. S. Naval Hospital ★[1] (Roent.)..................Philadelphia

Name of Hospital	Location	Chief of Service	Type of Training [12]	Roentgenographic Examinations	X-Ray Treatments	Radium Treatments	Autopsy Percentage	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Jefferson-Hillman Hospitals ★[1,4]	Birmingham, Ala.	M. Barfield-Carter	Rad.	15,593	6,413	35	30	2	7/1	1	$ 30.00
†Norwood Hospital ★[1]	Birmingham, Ala.	L. E. Sorrell	Roent.	9,415	3,449	125	48	1	Varies	1	.....
†St. Monica's Hospital ★[1]	Phoenix, Ariz.	J. Foster	Rad.	4,637	163	10	32	1	4/1	1-2	200.00
†San Joaquin General Hospital ★[1]	French Camp, Calif.	A. M. Cove	Roent.	18,244	3,150	9	72	1	7/1	1-3	200.00
†Cedars of Lebanon Hospital ★[1]	Los Angeles	E. Freedman	Rad.	11,500	4,533	96	39	2	7/1	1	100.00
Los Angeles County Hospital ★[3,4]	Los Angeles	R. A. Carter	Rad.	54,755	6,480	355	33	3	....	3	157.20
†Queen of Angels Hospital ★[1]	Los Angeles	L. S. Goin	Rad.	7,704	4,223	97	29	1	7/1	3	100.00
St. Vincent's Hospital ★[2]	Los Angeles	K. S. Davis	Rad.	7,917[b]	1,231[b]	..	43	1	....	1	.....
White Memorial Hospital ★[3]	Los Angeles	W. L. Stilson	Rad.	11,097	7,842	316	44	2	....	1-3	30.00
Highland-Alameda County Hospital ★[3]	Oakland, Calif.	H. H. Jensen	Rad.	11,610	1,668	23	59	1	7/1	1-3	155.00
†Permanente Foundation Hospital ★[1,4]	Oakland, Calif.	O. Hatschek	Rad.	9,726	3,293	120	70	1	....	1	.....
Collis P. and Howard Huntington Memorial Hospital ★[2]	Pasadena, Calif.	J. F. Chapman and R. S. Harrison	Roent.	6,823	2,374	4	59	1	7/1	1	85.00
†Franklin Hospital ★[1,4]	San Francisco	A. J. Williams	Roent.	8,373	1,758	7	33	1	....	1	.....
Mount Zion Hospital ★[1]	San Francisco	J. Levitin	Roent.	5,646	539	9	64	1	7/1	1	75.00
†St. Mary's Hospital ★	San Francisco	C. S. Capp	Roent.	11,144	3,258	..	34	1	4/1	1	100.00
San Francisco Hospital ★[2,4]	San Francisco	L. H. Garland and A. J. Williams	Rad.	58,922	2,297	31	27	4	7/1	1-3	.....
Stanford University Hospital ★[3,4]	San Francisco	R. R. Newell	Rad.	15,769	8,263	147	44	4	7/1	1-2	50.00
University of California Hospital ★[3,4]	San Francisco	R. S. Stone	Rad.	20,255	13,690	162	69	4	7/1	1	50.00
†Veterans Administration Hospital	San Francisco	G. T. Leclercq	D.R.	.....	.....	..	..	3	7/1	1-3	275.00
†Santa Clara County Hospital ★[1]	San Jose, Calif.	T. N. Foster and J. Von Saltza	Roent.	4,404	1,199	6	31	1	....	1	185.00
†Santa Barbara Cottage Hospital ★	Santa Barbara, Calif.		D.R.	9,418	3,035	68	51	1	7/1	1	90.00
†St. John's Hospital ★	Santa Monica, Calif.	M. L. Pindell	Rad.	2,736	894	11	30	1	....	1	150.00
Veterans Administration Center [3]	W. Los Angeles, Calif.	C. G. Lyons	Rad.	40,538	11,261	87	35	6	....	3	275.00
Colorado General Hospital ★[3,4]	Denver	E. A. Schmidt	Rad.	11,684[b]	2,889[b]	..	75	2	10/1	1-2	85.00
†Presbyterian Hospital ★[1]	Denver	K. D. A. Allen	Rad.	5,608	1,805	71	57	1	....	3	.....
†St. Luke's Hospital ★[1]	Denver	W. P. Stampfli	Rad.	3,705	1,072	..	30	1	....	1	.....
†Veterans Administration Hospital [1]	Fort Logan, Colo.	C. F. Ingersoll	D.R.	.....	.....	..	..	3	10/1	1-3	275.00

Numerical and other references will be found on page 1375.

24. RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training [13]	Roentgenographic Examinations	X-Ray Treatments	Radium Treatments	Autopsy Percentage	Asst. Res. and Residencies [8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Corwin Hospital ★[2]	Pueblo, Colo.	G. A. Unfug	Roent.	6,714	1,663	10	62	1	5/1	1-3	75.00
†Bridgeport Hospital ★[1]	Bridgeport, Conn.	B. M. Parmelee	Rad.	.....	.....	..	36	1	....	1	.....
Hartford Hospital ★[3,4]	Hartford, Conn.	D. J. Roberts	Rad.	14,628	8,500	..	43	2	7/1	1-2	50.00
Grace-New Haven Community Hospital											
†Grace Unit ★[1]	New Haven, Conn.	R. M. Lowman	Rad.	6,226	4,146	..	29	1	7/1	3	40.00
New Haven Unit ★[3,4]	New Haven, Conn.	H. Wilson	Rad.	21,724	3,279	45	61	2	7/1	1	40.00
†Hospital of St. Raphael ★[1]	New Haven, Conn.	F. D. Staslo	Roent.	6,700	811	..	24	1	....	1	.....
†Waterbury Hospital ★	Waterbury, Conn.	J. L. Harvey	Rad.	5,732	1,281	54	39	1	9/1	1-3	100.00
†Delaware Hospital ★[2]	Wilmington, Del.	W. W. Lattomus	D.R.	10,682	2,572	58	51	1	10/1	1	125.00
Doctors Hospital ★[3]	Washington, D. C.	A. C. Christie	Rad.	1,500	844	116	65	2	7/1	3-4	125.00
†Gallinger Municipal Hospital ★[1,4]	Washington, D. C.	H. R. Reed	Rad.	21,460	904	10	44	1	7/1	1-3	75.00
Garfield Memorial Hospital ★[2,4]	Washington, D. C.	A. O. Hampton	Rad.	12,515	14,876	146	66	4	....	1	.....
Georgetown University Hospital ★[2]	Washington, D. C.	F. O. Coe	Rad.	6,951	4,160	84	40	2	7/1	1-2	75.00
Sibley Memorial Hospital ★[3,4]	Washington, D. C.	W. M. Clopton	Rad.	7,424	1,632	32	68	2	....	1-2	100.00
Veterans Administration Hospital [2]	Washington, D. C.	S. R. Bersack	Rad.	15,910	2,258	13	..	1	1/1	1-3	275.00
James M. Jackson Memorial Hospital ★[2]	Miami, Fla.	K. A. Bibby	Rad.	31,500	3,870	26	31	1	....	1	.....
Grady Memorial Hospital ★[3,4]	Atlanta, Ga.	H. S. Weens	Rad.	9,279	4,314	..	39	3	....	1	.....
Piedmont Hospital ★[3]	Atlanta, Ga.	G. R. Hrdlicka	Rad.	2,706	883	..	45	1	....	1	.....
†University Hospital ★[3,4]	Augusta, Ga.	L. P. Holmes	Rad.	34,107	4,290	..	39	2	7/1	1-2	40.00
†Emory University Hospital ★[1]	Emory University, Ga.		Rad.	6,476	5,816	100	39	1	....	1	.....
†Alexian Brothers Hospital ★[1]	Chicago	M. Indovina	Roent.	15,000	2,000	75	50	1	6/1	1-3	100.00
Augustana Hospital ★[1]	Chicago	D. S. Beilin	Rad.	5,555	7,251	..	50	1	11/1	1-3	50.00
Cook County Hospital ★[3,4]	Chicago	G. M. Landau	Rad.	66,515	22,141	78	21	4	....	1-3	.....
†Edgewater Hospital ★[1]	Chicago	N. S. Zeitlin	Roent.	525	104	..	40	1	7/1	1-3	None
†Illinois Masonic Hospital ★[4]	Chicago	J. H. Gilmore	Rad.	7,760	162	14	31	1	Varies	1-3	.....
†Lutheran Deaconess Home and Hospital ★[1]	Chicago	R. G. Willy and J. T. Murphy	Roent.	7,458	904	..	23	1	....	1	100.00
†Mercy Hospital-Loyola University Clinics ★[1]	Chicago	W. W. Furey	Rad.	8,600	8,315	251	44	2	....	1-3	.....
Michael Reese Hospital ★[3,4]	Chicago	R. A. Arens	Rad.	24,332	16,312	4,324	66	2	....	3	.....
Mount Sinai Hospital ★[2,4]	Chicago	J. Arendt	Roent.	7,687	3,333	..	40	2	7/1	1	50.00
Passavant Memorial Hospital ★[3,4]	Chicago	J. T. Case	Rad.	5,422	1,654	33	69	2	....	1	.....
Presbyterian Hospital ★[3]	Chicago	F. H. Squire	Rad.	22,928	5,735	52	64	2	....	1-3	.....
Provident Hospital ★[2,4]	Chicago	W. Quinn	Rad.	4,074	1,020	19	57	1	....	1	.....
†Ravenswood Hospital ★[1]	Chicago	D. L. Jenkinson	Rad.	.....	.....	..	31	1	....	1	.....
Research and Educational Hospitals ★[3,4]	Chicago	R. A. Harvey	Rad.	10,915	10,802	..	90	4	7/1	1-3	55.00
†St. Joseph Hospital ★[1,4]	Chicago	W. E. Anspach	Roent.	3,988[b]	1,219[b]	..	43	2	....	1	.....
St. Luke's Hospital ★[3,4]	Chicago	E. L. Jenkinson	Rad.	24,583	6,931	45	59	5	7/1	1-3	25.00
University of Chicago Clinics ★[3]	Chicago	P. C. Hodges	Rad.	18,752	5,630	114	83	3	....	1-3	25.00
Wesley Memorial Hospital ★[2,4]	Chicago	E. E. Barth	Rad.	.....	1,537	..	62	3	1/1, 7/1	1-3	25.00
†Woodlawn Hospital ★[4]	Chicago	H. Olin	Roent.	4,671	1,072	16	58	1	1/1	1-3	.....
Evanston Hospital ★[3]	Evanston, Ill.	E. R. Crowder	Rad.	16,456	1,078	..	86	3	....	3	50.00
†St. Francis Hospital ★[1]	Evanston, Ill.	A. C. Ledoux	Rad.	12,483	1,048	28	35	1	....	1	75.00
†Little Company of Mary Hospital ★[1]	Evergreen Park, Ill.	W. W. Furey	D.R.	9,295	1,745	75	25	1	3/1	1	100 00
Veterans Administration Hospital [3]	Hines, Ill	C. W. McClanahan	Rad.	79,194	38,169	88	..	5	....	1-3	275.00
†Ryburn Memorial Hospital [1,19]	Ottawa, Ill.	R. T. Pettit	Ther.Rad.	1,820	3,624	125	..	1	5/1	1	150.00
†Methodist Hospital of Central Illinois ★	Peoria, Ill.	F. H. Decker	Rad.	6,760	2,222	83	26	1	7/1	1	100.00
St. Francis Hospital ★[2,4]	*Peoria, Ill.*	P. R. Dirkse	Rad.	10,779	3,155	2	35	1	8/1	1-2	150 00
†Clinic Hospital [1]	Bluffton, Ind.	L. Long	Rad.	23,910	1,632	31	54	1	7/1	1-3	100.00
†St. Mary's Mercy Hospital ★	Gary, Ind.	C. P. Galanti	Roent.	6,147	3,024	..	25	1	7/1	2-3	50.00
St. Margaret Hospital ★[2]	Hammond, Ind.	C. W. Rauschenbach	Roent.	4,370	936	15	24	2	....	1-3	200.00
Indianapolis City Hospital ★[3]	Indianapolis	L. Smith	Rad.	9,803	3,220	60	41	2	....	1-3	.....
Indiana University Medical Center ★[3,4]	Indianapolis	J. A. Campbell	Rad.	16,112	9,208	275	58	3	....	1-3	.....
Methodist Hospital ★[3,4]	Indianapolis	H. C. Ochsner	Rad.	18,936	4,794	..	33	2	1/1	1-2	200.00
†Veterans Administration Hospital	Indianapolis	R. T. Levin	D.R.	7,187	.....	..	30	3	Varies	1-5	275.00
†St. Elizabeth's Hospital ★	LaFayette, Ind.	D. C. McClelland	Rad.	7,058	2,513	47	22	1	Varies	1	.....
Iowa Methodist Hospital ★[3]	Des Moines, Iowa	T. A. Burcham	Rad.	11,673	2,371	69	74	2	Varies	1-3	125.00
University Hospitals ★[3,4]	Iowa City	H. D. Kerr	Rad.	30,679	16,089	21	56	9	....	1	40.00
University of Kansas Hospitals ★[3,4]	Kansas City, Kan.	G. M. Tice	Rad.	33,670	9,488	188	59	2	....	1	.....
†Veterans Administration Hospital [1]	Wadsworth, Kan.	C. F. Bloom	D.R.	13,389	.....	..	45	6	Varies	3	275.00
†Louisville General Hospital ★	Louisville, Ky.	S. E. Johnson	Rad.	16,953	1,676	29	38	2	7/1	1-3	83.33
†St. Joseph Infirmary ★[1]	Louisville, Ky.	S. E. Johnson	Rad.	8,552	8,361	132	34	2	7/1	1-3	66 67
†Veterans Administration Hospital [1]	Louisville, Ky.	E. L. Shiflett	D.R.	.....	.....	..	..	3	7/1	1-3	275.00
Charity Hospital of Louisiana ★[3,4]	New Orleans	L. J. Menville	Rad.	63,587	34,933	449	49	8	7/1	1-3	25.00
Southern Baptist Hospital ★[3]	New Orleans	L. J. Bristow	Rad.	10,438	4,707	..	25	2	....	1-3	150.00
Touro Infirmary ★[3]	New Orleans	M. D. Teitelbaum	Roent.	12,264	4,748	..	55	1	7/1	1	17.50
Shreveport Charity Hospital ★[3,4]	Shreveport, La.	G. M. Riley	Rad.	7,259	8,257	97	47	2	....	1-3	.....
†Baltimore City Hospital ★[1,4]	Baltimore	S. H. Macht	Rad.	10,500	500	..	55	3	7/1	1	35.00
Johns Hopkins Hospital ★[3,4]	Baltimore	R. J. Morgan	Rad.	156,051	8,846	199	65	2	7/1	1-3	.....
†Sinai Hospital ★	Baltimore	M. Ostro	Roent.	9,086	890	..	60	2	7/1	..	35.00
†Union Memorial Hospital ★	Baltimore	W. B. Firor	Rad.	7,121	.....	..	17	1	7/1	1	None
University Hospital ★[2,4]	Baltimore	W. L. Kilby	Rad.	26,383	3,875	205	58	3	7/1	1-2	75.00
†U. S. Marine Hospital ★	Baltimore	S. R. Baker	Ther.Rad.	18,146	7,150	222	67	1	7/1	1-3	184.16
†Veterans Administration Hospital [1]	Fort Howard, Md.	H. A. Miller	D.R.	6,815	.....	..	..	2	7/1	1-3	275.00
Beth Israel Hospital ★[2]	Boston	S. A. Robins	Rad.	8,039	2,165	12	58	3	4/1	2	41.66
Boston City Hospital ★[3,4]	Boston	M. Ritvo	Rad.	53,934	3,166	70	19	4	....	1	.....
Children's Hospital ★[1,4]	Boston	E. B. D. Neuhauser	Roent.	17,454	1,524	..	76	1	....	1	.....
Joseph H. Pratt Diagnostic Hospital [1,4]	Boston	A. Ettinger	Roent.	12,700	100	..	62	1	....	1	.....
Lahey Clinic [3]	Boston	H. F. Hare	Rad.	50,000[b]	7,200[b]	..	..	3	Varies	1-3	125.00
Massachusetts General Hospital ★[3]	Boston	L. L. Robbins	Rad.	39,119	13,311	172	53	3	....	1-3	.....
Massachusetts Memorial Hospital ★[3,4]	Boston	G. Levene	Rad.	1,124	2,344	46	70	2	....	3	50.00
New England Deaconess Hospital [2]	Boston	J. H. Marks	Rad.	8,629	4,912	..	63	1	....	1	75.00
Peter Bent Brigham Hospital ★[3]	Boston	M. C. Sosman	Rad.	31,417	2,701	230	74	3	....	1-3	.....
†St. Elizabeth Hospital ★[4]	Boston	A. M. Moloney	Roent.	3,822	.....	..	21	1	6/1	1	75.00
†Veterans Administration Hospital (West Roxbury)	Boston	E. G. Wissing	D.R.	45,000	.....	..	..	1	10/1	1	275.00
†Mount Auburn Hospital ★[4]	Cambridge, Mass.	J. W. Meachen	D.R.	10,328	15	..	45	1	7/1	1	50.00
Newton-Wellesley Hospital ★[2,4]	Newton, Mass.	C. Liebman	Roent.	8,176	1,834	..	34	1	11/19	2	100.00
†Quincy City Hospital ★[1]	Quincy, Mass.	W. S. Altman	Roent.	6,496	708	9	44	1	7/1	1+	75.00
Salem Hospital ★[3]	Salem, Mass.	S. A. Wilson	Rad.	7,803	1,338	10	32	1	7/1	1	50.00
†Westfield State Sanatorium [1]	Westfield, Mass.	J. W. Turner	Rad.	7,666	6,639	83	36	1	7/1	1	200.00
†Memorial Hospital ★[4]	Worcester, Mass.	W. J. Elliott	Rad.	10,774	3,344	65	33	1	7/1	1	100.00
St. Joseph's Mercy Hospital ★[3]	Ann Arbor, Mich.	S. W. Donaldson	Rad.	11,897	2,586	44	46	2	....	2	125.00
University Hospital ★[3,4]	Ann Arbor, Mich.	F. J. Hodges	Rad.	41,134	14,420	276	61	6	....	1-3	.....
†Veterans Administration Hospital [1]	Dearborn, Mich.	P. H. Schraer	D.R.	7,865	.....	..	..	4	1/1, 7/1	1-3	275.00
City of Detroit Receiving Hospital ★[2,4]	Detroit	I. D. Harris	Roent.	26,879	.....	..	25	2	7/15	1-3	None

Numerical and other references will be found on page 1375.

24. RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training[12]	Roentgenographic Examinations	X-Ray Treatments	Radium Treatments	Autopsy Percentage	Asst. Res. and Residencies[8]	Beginning of Service (1917)	Length of Service (Years)	Beginning Stipend (Month)
Grace Hospital ★[3]	Detroit	H. A. Jarre	Rad.	12,476	5,802	18	35	2	7/1	1-3	75.00
Harper Hospital ★[3,4]	Detroit	L. Reynolds	Rad.	.....	.....	..	33	3	....	1	.....
Henry Ford Hospital ★[3,4]	Detroit	H. P. Doub	Rad.	41,270	4,705	206	57	4	7/1	1-3	200.00
†Herman Kiefer Hospital [1,4]	Detroit	C. C. Birkelo	Roent.	36,333	213	..	47	1	7/1	1	265.00
Providence Hospital ★[3]	Detroit	W. A. Irwin	Rad.	15,350	7,290	225	73	1	....	1-3	.....
St. Mary's Hospital ★[3]	Detroit	J. E. Lofstrom	Rad.	8,563	3,610	56	59	3	....	3	140.00
†Wayne County General Hospital and Inf. ★[1]	Eloise, Mich.	N. R. Shippey	Rad.	28,727	4,881	26	28	2	7/1	1-3	197.50
Hurley Hospital ★[3]	Flint, Mich.	M. W. Clift	Rad.	20,695	4,240	76	53	1	7/1	1-3	.....
†Butterworth Hospital ★[1]	Grand Rapids, Mich.	R. J. McCandliss	Rad.	8,811	4,836	62	..	1	7/1	1-3	100.00
†Hackley Hospital ★[1]	Muskegon, Mich.	L. E. Holly	Roent.	6,410	4,306	17	33	1	7/1	1-3	110.00
St. Mary's Hospital ★[1]	Duluth, Minn.	J. R. McNutt	Rad.	5,768	3,108	30	79	1	7/1	1	75.00
University Hospitals ★[3,4]	Minneapolis	L. G. Rigler	Rad.	28,164	11,684	602	75	11	7/1	1-3	100.00
Mayo Foundation [3]	Rochester, Minn.	B. R. Kirklin	Rad.	(See page 1375)				15	....	1-3	.....
†Ellis Fischel State Cancer Hospital [1,4]	Columbia, Mo.	D. V. LeMone	Rad.	2,574	14,067	6	76	1	7/1	1-2	50.00
†Kansas City General Hospital No. 1 ★[1]	Kansas City, Mo.	L. A. Scarpellino and D. S. Dann	Rad.	12,629	1,116	96	60	3	7/1	1-3	50.00
†Menorah Hospital ★	Kansas City, Mo.	D. S. Dann	Rad.	3,975	2,560	46	27	1	7/1	1-3	150.00
Research Hospital ★[3,4]	Kansas City, Mo.	I. H. Lockwood	Rad.	34,309	2,712	411	50	3	....	1	.....
St. Joseph Hospital ★[3]	Kansas City, Mo.	C. E. Virden	Rad.	8,624	4,693	178	46	1	....	1	.....
†St. Luke's Hospital ★[1]	Kansas City, Mo.	L. A. Scarpellino	Rad.	7,778	239	32	70	1	....	1	75.00
†St. Mary's Hospital ★[1]	Kansas City, Mo.	E. R. Deweese	Rad.	4,691	431	33	68	2	....	1	.....
Barnes Hospital ★[3]	St. Louis	S. Moore	Rad.	22,882	1,075	106	70	5	7/1	1-3	25.00
Homer G. Phillips Hospital ★[3]	St. Louis	E. W. Spinzig	Rad.	13,624	1,930	..	23	1	7/1	1	50.00
†Jewish Hospital ★	St. Louis	P. S. Schnoebelen	Rad.	8,277	4,089	197	33	2	7/1	1-3	.....
St. Louis City Hospital ★[3,4]	St. Louis	D. Weir	Rad.	23,696	2,669	132	50	3	7/1	1-3	86.00
St. Luke's Hospital ★[3]	St. Louis	O. C. Zink	Rad.	5,816	1,368	137	38	1	7/1	1	75.00
St. Mary's Group of Hospitals ★[3]	St. Louis	L. Sante	Rad.	22,051		61	51	2	Varies	3	35.00
Creighton Memorial St. Joseph's Hosp. ★[3,4]	Omaha	J. E. Kelly	Rad.	12,213	835	108	42	1	7/1	1-2	100.00
†Nebraska Methodist Hospital ★[1]	Omaha	H. B. Hunt	Rad.	6,321	3,248	72	59	1	7/1	1-3	100.00
University of Nebraska Hospital ★[3]	Omaha	H. B. Hunt	Rad.	3,991	2,224	123	98	1	7/1	1-3	50.00
†St. Mary's Hospital	Reno, Nev.	M. J. Thorpe	Roent.	.....	.....	..	..	1	Varies	2	.....
Mary Hitchcock Memorial Hospital ★[2]	Hanover, N. H.	L. K. Sycamore	Rad.	8,178	2,733	43	85	1	....	1	.....
†Atlantic City Hospital ★[1]	Atlantic City, N. J.	C. B. Kaighn	Rad.	6,035	1,227	37	34	1	7/1	1	.....
†Jersey City Hospital ★	Jersey City, N. J.	H. Perlberg	Rad.	20,000	1,500	150	18	2	7/1	1-2	35.00
Newark Beth Israel Hospital ★[1]	Newark, N. J.	N. J. Furst	Rad.	6,335	3,732	188	32	1	7/1	1	100.00
†Newark City Hospital ★	Newark, N. J.	P. J. Santora	Rad.	11,183	2,469	36	24	1	7/1	2	30.00
†Newcomb Hospital [1]	Vineland, N. J.	J. Gershon-Cohen	D.R.	6,752	515	..	..	1	....	1	.....
†Albany Hospital ★[1,4]	Albany, N. Y.	W. P. Howard	Roent.	19,188	4,281	313	60	2	7/1	1	41.67
†Beth-El Hospital ★[4]	Brooklyn	M. Dannenberg	Roent.	5,053	694	42	32	2	7/1	1-3	100.00
†Beth Moses Hospital ★[1,4]	Brooklyn	L. A. Held	Roent.	2,686	493	23	23	1	....	1	.....
†Brooklyn Cancer Institute	Brooklyn	S. W. Westing	Rad.	4,459	6,671	401	23	4	Varies	1-2	100.00
Brooklyn Hospital ★[2,4]	Brooklyn	J. Pepe	Rad.	7,800	2,061	70	33	2	7/1	1-2	25.00
Jewish Hospital ★[3,4]	Brooklyn	M. G. Wasch	Rad.	14,569	3,210	7	41	4	4/1	1+	30.00
Kings County Hosp. ★ (D.R.,[2] Ther.Rad.[1])	Brooklyn	B. Ehrenpreis	D.R.Ther.Rad.	63,514	11,809	107	17	4	7/1	1-2	70.00
Long Island College Hospital ★[3,4]	Brooklyn	A. L. L. Bell	Rad.	15,348	3,132	94	36	3	7/1	3	25.00
Methodist Hospital ★[2]	Brooklyn	G. W. Cramp	Rad.	8,197	1,598	55	35	1	....	1	.....
dward J. Meyer Memorial Hospital ★[3,4]	Buffalo	E. G. Eschner	Rad.	38,541	2,324	28	38	4	7/1	3	100.00
eadowbrook Hospital ★[2]	Hempstead, N. Y.	G. L. Carr	Rad.	5,053	2,705	22	44	1	....	1	.....
ueens General Hospital ★[2,4]	Jamaica, N. Y.	I. S. Startz	Rad.	9,036	7,015	61	45	3	....	1-2	70.00
harles S. Wilson Memorial Hospital ★[1]	Johnson City, N. Y.	D. B. Jay	Roent.	12,500	2,044	11	29	1	....	1	.....
ount Vernon Hospital ★[1]	Mount Vernon, N. Y.	W. H. Shehadi	Rad.	6,290	1,371	16	29	1	7/1	1-3	.....
ew Rochelle Hospital ★[2]	New Rochelle, N. Y.	J. F. Miller	Roent.	9,092	1,721	13	25	1	....	1	.....
ellevue Hospital, Div. III—N. Y. Univ. ★[1,4]	New York City	I. I. Kaplan	Ther.Rad.	.....	.....	..	32	5	Varies	1	45.00
ellevue Hospital, Div. IV—Open Div. ★[1,4]	New York City	L. J. Friedman	D.R.	176,888	.....	..	32	5	1/1, 7/1	1½	45.00
eth Israel Hospital ★[3,4]	New York City	A. J. Bendick	Rad.	5,961	2,013	14	32	2	7/1	1	50.00
ronx Hospital ★[2,4]	New York City	W. Snow	Rad.	4,478	1,321	..	24	2	7/1	1-3	75.00
lower and Fifth Avenue Hospitals ★[3,4]	New York City	F. Dorrell	Rad.	10,057	2,343	46	27	2	7/1	1	.....
rench Hospital ★[2]	New York City	E. Claiborne	Rad.	11,330	1,986	..	26	1	....	1-2	.....
oldwater Memorial Hospital ★[2,4]	New York City	H. K. Taylor	Roent.	9,445	250	..	38	1	7/1	1	50.00
ospital for Joint Diseases ★[3,4]	New York City	M. M. Pomeranz	Rad.	17,830	1,639	30	39	1	7/1	1-3	40.00
enox Hill Hospital ★[2,4]	New York City	F. H. Ghiselin	Roent.	17,237	3,283	20	44	2	7/1	1-2	50.00
incoln Hospital ★[1,4]	New York City	E. Kraft	Rad.	20,416	329	..	22	1	....	1	.....
emorial Hospital ★[1,4]	New York City	R. Herendeen	D.R.	14,751	58,599	1,740	49	2	....	1	.....
etropolitan Hospital ★[2,4]	New York City	T. B. Weinberg	Rad.	18,483	.....	..	22	2	1/1, 7/1	1	100.00
ontefiore Hosp. for Chronic Diseases ★[2,4]	New York City	S. Fineman	Rad.	.....	.....	..	51	4	1/1, 7/1	1	50.00
orrisania City Hospital ★[2,4]	New York City	S. Weltzner	Rad.	1,319	3,166	38	19	1	11/15	1-2	.....
ount Sinai Hospital ★[3,4]	New York City	M. L. Sussman	Rad.	28,161	8,024	50	63	7	1/1, 7/1	2	50.00
ew York City Hospital ★[1,4]	New York City	C. Gottlieb	D.R.	9,708	.....	..	39	4	7/1	1	120.00
ew York Hospital ★[3,4]	New York City	H. Temple	Rad.	48,695	7,861	..	60	2	7/1	1-4	25.00
ew York Polyclinic Medical School and Hospital ★[2]	New York City	E. E. Smith	Rad.	6,777	2,099	26	26	2	7/1	2	25.00
ew York Post-Graduate Medical School and Hospital ★[2]	New York City	W. M. Meyer	Rad.	9,276	5,496	656	38	3	....	1-2	30.00
resbyterian Hospital ★[3,4]	New York City	R. Golden	Rad.	72,344	22,055	513	58	12	....	3	41.66
oosevelt Hospital ★[3,4]	New York City	W. H. Boone	Rad.	17,251	3,560	..	28	3	7/1	1-3	25.00
St. Luke's Hospital ★[2]	New York City	E. J. Ryan	Rad.	20,686	5,240	146	35	2	....	1-3	50.00
†St. Vincent's Hospital ★[4]	New York City	W. W. Maver and C. Oderr	Rad.	50,121	3,559	55	42	2	1/1	1-3	50.00
Sydenham Hospital ★[1]	New York City	A. S. Unger	Roent.	4,311	337	..	26	1	7/1	1-3	100.00
†Veterans Administration Hospital	New York City	A. Sheinmel	Roent.	47,877	14,228	..	30	4	7/1	1-3	303.00
Genesee Hospital ★[1]	Rochester, N. Y.	S. Larson	Roent.	8,431	971	16	54	1	....	1	.....
Rochester General Hospital ★[3,4]	Rochester, N. Y.	L. R. Lingeman	Rad.	14,637	3,193	27	72	2	7/1	1-3	60.00
†St. Mary's Hospital ★	Rochester, N. Y.	H. H. Forsyth Jr. and A. V. Winchell	Rad.	4,877	171	2	42	1	....	1-3	85.00
Strong Memorial-Rochester Municipal Hospitals ★[3,4]	Rochester, N. Y.	G. H. Ramsey	Rad.	27,740	6,467	234	72	8	....	1-4	83.33
Ellis Hospital ★[1,4]	Schenectady, N. Y.	K. L. Mitton	Roent.	9,343	2,047	35	29	1	7/1	1-3	100.00
†U. S. Marine Hospital ★[1]	Stapleton, S. I., N. Y.	W. M. Sennott	Roent.	45,703	2,371	..	65	2	....	1-2	.....
Sea View Hospital [1,4]	Staten Island, N. Y.	A. V. Shapiro	D.R.	13,887	.....	..	9	2	1/1, 7/1	1	120.00
†Crouse-Irving Hospital ★[1]	Syracuse, N. Y.	C. F. Potter	Roent.	4,333	433	..	25	1	1/1	1-3	50.00
Grasslands Hospital ★[3,4]	Valhalla, N. Y.	A. G. Debbie	Rad.	11,991	5,527	4	51	2	7/1	1-3	75.00
Charlotte Memorial Hospital ★[1,4]	Charlotte, N. C.	A. Tuggle	Rad.	9,707	3,176	56	48	1	....	1	75.00
Duke Hospital ★[3,4]	Durham, N. C.	R. G. Reeves	Rad.	39,928	10,859	337	63	3	7/1	1	83.33
Watts Hospital ★[3]	Durham, N. C.	W. W. Vaughan	Rad.	25,493	3,910	146	36	1	7/1	1-2	75.00
†City Hospital ★[1]	Winston-Salem, N. C.	J. Selman	Roent.	4,880	1,269	8	18	1	7/1	1-3	50.00
North Carolina Baptist Hospital ★[3,4]	Winston-Salem, N. C.	J. P. Rousseau	Rad.	12,498	8,005	77	59	3	....	1-3	.....

Numerical and other references will be found on page 1375.

24. RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training[12]	Roentgenographic Examinations	X-Ray Treatments	Radium Treatments	Autopsy Percentage	Asst. Res. and Residencies	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
†Bismarck Evangelical Hospital	Bismarck, N. D.	H. M. Berg	Rad.	15,920	2,901	31	31	3	Varies	1-3	100.00
City Hospital ★[3]	Akron, Ohio	F. T. Moore	Rad.	17,001	8,071	75	25	2	....	1	100.00
†Peoples Hospital ★[1]	Akron, Ohio	E. L. Voke	Rad.	6,611	5,529	62	25	1	7/1	1-3	100.00
†Mercy Hospital ★	Canton, Ohio	G. D. Popoff	Rad.	12,012	3,379	59	16	1	....	1-3	100.00
Cincinnati General Hospital ★[3]	Cincinnati	H. G. Reineke	Rad.	34,223	6,881	80	26	7	....	1	.....
Jewish Hospital ★[3]	Cincinnati	S. Brown	Rad.	7,209	802	54	38	2	7/1	1-3	75.00
City Hospital ★[3,4]	Cleveland	H. Hauser	Rad.	22,789	7,706	..	56	4	....	1	.....
Cleveland Clinic Foundation Hospital [3,4]	Cleveland	C. R. Hughes	Rad.	41,000	7,673	312	35	6	7/1	1-3	100.00
†Lutheran Hospital ★[1,4]	Cleveland	J. A. Groh	Rad.	7,280	1,649	..	45	1	7/1	1-3	.....
†Mount Sinai Hospital ★[1]	Cleveland	H. A. Mahrer	Rad.	8,321	2,341	87	26	1	7/1	1	100.00
†St. Alexis Hospital ★	Cleveland	E. P. McNamee	Rad.	9,009	8	14	31	1	7/1	1	75.00
St. Luke's Hospital ★[3]	Cleveland	D. D. Brannan	Rad.	16,057	3,209	61	47	3	6/25	3	60.00
St. Vincent Charity Hospital ★[3]	Cleveland	J. R. Andrews	Rad.	9,627	587	30	32	2	....	1+	75.00
University Hospitals ★[3,4]	Cleveland	H. L. Friedell	Rad.	25,970	5,228	405	52	2	7/1	1	25.00
†Veterans Administration Hospital [1]	Cleveland	M. D. Sachs	D.R.	8,000	600	..	60	3	1/1, 7/1	1-3	275.00
Starling-Loving University Hospital ★[3,4]	Columbus, Ohio	H. G. Means	Rad.	13,671	2,872	37	66	3	7/1	1-3	50.00
†Miami Valley Hospital ★[1]	Dayton, Ohio	G. A. Nicoll	Rad.	8,012	1,019	31	28	1	10/1	1-3	75.00
†St. Vincent's Hospital ★[1,4]	Toledo, Ohio	C. E. Hufford	Rad.	14,055	.....	69	24	1	....	1	.....
†Youngstown Hospital ★[1]	Youngstown, Ohio	J. Heberling and E. C. Baker	Rad.	18,091	10,980	24	29	1	7/1	1	100.00
University Hospitals ★[1]	Oklahoma City	J. E. Heatley	Rad.	11,909	10,102	..	33	1	7/1	1	35.00
Good Samaritan Hospital ★[3]	Portland, Ore.	G. B. Isenhart	Rad.	7,760	1,561	55	53	1	7/1	1	75.00
†Providence Hospital ★[1]	Portland, Ore.	S. E. Rees	Roent.	6,952	1,339	..	36	2	7/1	1-5	100.00
St. Vincent's Hospital ★[3]	Portland, Ore.	S. E. Rees	Rad.	.....	.....	..	43	1	....	1	.....
University of Oregon Medical School Hospitals and Clinics ★[3,4]	Portland, Ore.	W. Y. Burton	Rad.	16,011	4,154	20	51	3	7/1	3	75.00
Abington Memorial Hospital ★[3]	Abington, Pa.	J. D. Zulick	Rad.	13,013	2,691	78	47	1	7/1	3	50.00
†Veterans Administration Hospital	Aspinwall, Pa.	E. J. Euphrat	D.R.	15,230	.....	..	31	3	Varies	3	.....
Bryn Mawr Hospital ★[3]	Bryn Mawr, Pa.	R. S. Bromer	Rad.	12,457	3,929	141	45	1	8/1	1-2	80.00
Geo. F. Geisinger Memorial Hospital ★[3]	Danville, Pa.	C. L. Hinkel	Rad.	8,197	2,091	51	51	1	7/1	1	75.00
†Conemaugh Valley Memorial Hospital ★	Johnstown, Pa.	J. B. Hall	Roent.	9,870	861	61	20	1	9/1	1	150.00
†American Oncologic Hospital [1,4]	Philadelphia	W. S. Newcomet	Ther.Rad.	961	7,006	278	71	1	....	1	.....
Episcopal Hospital ★[2,4]	Philadelphia	D. A. Sampson	Rad.	10,772	2,587	19	45	1	....	1	50.00
†Frankford Hospital ★[2]	Philadelphia	F. F. Borzell	Rad.	12,937	.....	..	15	1	7/1	1-2	None
†Germantown Dispensary and Hospital ★[1]	Philadelphia	T. P. Loughery	Rad.	13,759	1,170	50	60	1	7/1	1-2	50.00
Graduate Hospital of the Univ. of Penna. ★[3]	Philadelphia	A. Finkelstein	Rad.	11,871	3,951	45	76	2	7/1	1-2	25.00
Hahnemann Hospital ★[2,4]	Philadelphia	J. W. Frank	Rad.	11,735[b]	3,341[b]	358[b]	46	2	....	1	.....
Hospital of the University of Penna. ★[3,4]	Philadelphia	E. P. Pendergrass	Rad.	88,085	20,541	129	75	12	7/15	3-5	.....
Jeanes Hospital [2,4]	Philadelphia	E. Lame	Ther.Rad.	1,530	2,258	..	41	1	....	1	.....
Jefferson Medical College Hospital ★[3]	Philadelphia	P. C. Swenson	Rad.	30,971	.....	1,202	55	8	....	1-3	.....
Jewish Hospital ★[3,4]	Philadelphia	L. Solis-Cohen	Rad.	14,292	4,211	231	56	1	7/1	1-2	75.00
Lankenau Hospital ★[2]	Philadelphia	J. T. Farrell Jr.	Rad.	10,920	1,901	75	59	1	7/1	1-3	100.00
†Nazareth Hospital ★[1]	Philadelphia	J. S. Fetter	Roent.	5,850	2,818	13	21	1	7/1	1-2	100.00
Mount Sinai Hospital ★[3,4]	Philadelphia	L. Edeiken and G. Rosenbaum	Rad.	6,756	699	292	61	1	6/1	1-2	50.00
Pennsylvania Hospital ★[3]	Philadelphia	P. A. Bishop	Rad.	13,191	1,541	161	44	2	10/16, 11/1	1-3	20.00
Philadelphia General Hospital ★[2,4]	Philadelphia	B. P. Widmann	Rad.	20,202	11,827	129	70	1	....	1-3	70.00
Presbyterian Hospital ★[2,4]	Philadelphia	J. H. Vastine	Rad.	8,292	6,284	69	50	1	....	1-3	50.00
Temple University Hospital ★[3,4]	Philadelphia	W. E. Chamberlain	Rad.	23,609	4,899	25	50	3	7/1	3	50.00
Elizabeth Steel Magee Hospital [3,4]	Pittsburgh	S. G. Henderson	Rad.	4,966	2,811	102	25	2	7/1	3	41.67
Mercy Hospital ★[1,4]	Pittsburgh	J. A. L. McCullough	Rad.	10,094	3,392	240	29	1	9/1	1-3	.....
Montefiore Hospital ★[3]	Pittsburgh	M. F. Goldsmith	Rad.	7,635	2,406	..	37	1	7/1	1	50.00
†St. Francis Hospital ★[1]	Pittsburgh	L. H. Osmond	Rad.	27,630	3,151	37	25	1	....	3	100.00
Western Pennsylvania Hospital ★[2]	Pittsburgh	R. G. Alley and H. W. Jacox	Rad.	10,279	1,384	139	20	1	....	1	100.00
†Reading Hospital ★[1,4]	Reading, Pa.	G. W. Chamberlin	Rad.	7,767	3,366	14	60	2	....	1	50.00
Robert Packer Hospital ★[3]	Sayre, Pa.	S. P. Perry	Rad.	10,649	3,188	57	47	1	7/1	1-3	150.00
†Chester County Hospital	West Chester, Pa.	H. Y. Pennell	Roent.	10,013	1,840	53	18	1	....	1	.....
†Columbia Hospital ★[1]	Wilkinsburg, Pa.	W. J. McGregor	Roent.	6,535	2,235	..	24	1	....	1-3	.....
†Rhode Island Hospital ★[1]	Providence, R. I.	L. A. Martineau	Rad.	18,035	3,637	126	75	1	7/1	1-3	50.00
Roper Hospital ★[3]	Charleston, S. C.	H. Rudisill Jr.	Rad.	10,068	2,262	73	42	2	7/1	1-4	25.00
Baptist Memorial Hospital ★[3]	Memphis, Tenn.	J. E. Whiteleather	Rad.	9,774	2,864	..	19	3	7/1	1	.....
John Gaston Hospital ★[3]	Memphis, Tenn.	J. M. Dougal	Rad.	12 620	1,849	44	56	3	7/1	1	32.50
Methodist Hospital ★[3]	Memphis, Tenn.	J. C. King	Rad.	10,737	2,011	30	31	1	....	1	.....
†Veterans Administration Hospital [1]	Memphis, Tenn.	W. H. Mendel	D.R.	6,060	80	..	..	6	Varies	1-4	275.00
†Geo. W. Hubbard Hospital of Meharry Medical College ★[1]	Nashville, Tenn.	L. D. Scott	Rad.	2,611	2,700	35	24	1	7/1	1	75.00
Vanderbilt University Hospital ★[3,4]	Nashville, Tenn.	C. C. McClure	Rad.	14,375	2,575	..	60	1	7/1	1	.....
†Veterans Administration Hospital [1]	Nashville, Tenn.	K. R. Delbert	D R.	6,675	214	..	..	2	7/1	1-3	275.00
Baylor University Hospital ★[3,4]	Dallas, Texas	F. M. Windrow	Rad.	329	2,249	22	80	1	7/1	1-3	50.00
†Methodist Hospital ★[1]	Dallas, Texas	M. L. Mazer	D.R.	6,362	.....	19	..	1	7/1	1-3	None
Parkland Hospital ★[3,4]	Dallas, Texas	J. E. Miller	Rad.	17,007	2,788	20	41	2	....	1-3	.....
†Veterans Administration Hospital	Dallas, Texas	C. L. Martin	Rad.	10,735	.....	..	..	2	7/15	1-3	275.00
John Sealy Hospital ★[3,4]	Galveston, Texas	M. Schneider	Rad.	20,564	2,039	..	62	3	....	1-3	50.00
†Methodist Hospital ★[1,4]	Houston, Texas	C. H. Burge	Roent.	5,806	2,059	30	35	1	1/1	1-3	75.00
†St. Joseph's Infirmary [1]	Houston, Texas	P. E. Wigby	Rad.	8,572	296	45	47	1	....	1	.....
†Santa Rosa Hospital ★[1]	San Antonio, Texas	M. Davis	D.R.	10,919[b]	1,172[b]	33[b]	22	1	....	1	.....
Scott and White Hospital ★[3]	Temple, Texas		Rad.	43,209	5,803	276	39	2	....	1	150.00
†Veterans Administration Hospital	Temple, Texas	L. J. Zimmerman	D.R.	.....	.....	..	..	1	7/1	1-3	275.00
†Salt Lake County General Hospital ★[1,4]	Salt Lake City	H. H. Lerner	D.R.	4,861	631	..	65	2	7/1	1	25.00
†Veterans Administration Hospital [1]	Salt Lake City	H. H. Lerner	D.R.	18,452	58	..	..	2	8/1	1-3	275.00
Mary Fletcher Hospital ★[1,4]	Burlington, Vt.	A. B. Soule Jr. and O. S. Peterson Jr.	Rad.	7,371	3,740	179	59	2	7/1	1	.....
University of Virginia Hospital ★[3,4]	Charlottesville, Va.	V. W. Archer	Rad.	17,885	6,948	..	49	9	....	1-3	.....
†De Paul Hospital ★[4]	Norfolk, Va.	W. H. Whitmore	Roent.	5,401	1,628	60	70	1	7/1	1-2	150.00
Medical College of Virginia, Hosp. Div. ★[3,4]	Richmond, Va.	F. B. Mandeville	Rad.	17,089	2,960	89	42	1	7/1	1	46.50
†Swedish Hospital (Tumor Clinic) ★[1]	Seattle, Wash.	S. T. Cantril	Ther.Rad.	5,791	6,013	144	43	2	7/1	1-3	100.00
Virginia Mason Hospital ★[3]	Seattle, Wash.	T. B. Carlile	Rad.	18,182	3,838	77	70	1	....	1	75.00
†Sacred Heart Hospital ★	Spokane, Wash.	G. Bracher	Rad.	5,125	1,770	40	16	1	Varies	1-3	125.00
State of Wisconsin General Hospital ★[3,4]	Madison, Wis.	E. A. Pohle	Rad.	31,504	8,249	193	64	5	7/1	3	25.00
Columbia Hospital ★[3]	Milwaukee	S. A. Morton	Rad.	22,473	3,597	..	49	1	10/1	3	50.00
†Milwaukee County Hospital ★[4]	Milwaukee	J. L. Marks	D.R.	10,050	845	16	33	1	7/1	1-3	75.00
†Milwaukee Hospital ★[1]	Milwaukee		Rad.	13,619	.....	726	42	1	....	3	70.00
†Queen's Hospital ★[1]	Honolulu, Hawaii	L. L. Buzaid	Rad.	18,150	1,480	60	61	1	Varies	1-2	150.00

Hospitals, 296; Assistant Residencies and Residencies, 639

Numerical and other references will be found on page 1375.

25. SURGERY

United States Army.—Residencies available to medical officers, U. S. Army.

Letterman General Hospital ★....................San Francisco
Fitzsimons General Hospital ★....................Denver
Walter Reed General Hospital ★....................Washington, D. C.
Wm. Beaumont General Hospital ★................El Paso, Texas
Brooke General Hospital ★..........................San Antonio, Texas
Madigan General Hospital ★.......................Fort Lewis, Wash.

United States Navy.—Residencies available to medical officers, U. S. Navy.

U. S. Naval Hospital ★...Long Beach, Calif.
U. S. Naval Hospital ★...Oakland, Calif.
U. S. Naval Hospital ★...San Diego, Calif.
U. S. Naval Hospital ★...Jacksonville, Fla.
U. S. Naval Hospital ★...Pensacola, Fla.
U. S. Naval Hospital ★....Great Lakes, Ill.
U. S. Naval
U. S. Naval
U. S. Naval
U. S. Naval
U. S. Naval Hospital ★....St. Albans, N. Y.
U. S. Naval Hospital ★....Philadelphia
U. S. Naval Hospital ★....Newport, R. I.
U. S. Naval Hospital ★....Portsmouth, Va.

Name of Hospital	Location	Chief of Service	Inpatients Treated [a]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies [a]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Jefferson and Hillman Hospitals ★[4]	Birmingham, Ala.	J. M. Mason	3,313	8,757	152	46	5	7/1	1	$ 30.00
Norwood Hospital ★	Birmingham, Ala.	C. N. Carraway and R. D. F. Talley	1,000	12,407	9	4	3	....	3	100.00
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company ★	Fairfield, Ala.	L. Noland	1,399	13,275	26	12	3	7/1	1-4	200.00
St. Joseph's Hospital ★	Phoenix, Ariz.	J. M. Greer	2,858	.....	21	5	1	7/1	1-2	150.00
Baptist State Hospital ★	Little Rock, Ark.	R. M. Eubanks	1,569	.....	43	10	2	....	1	.....
Herrick Hospital ★[4]	Berkeley, Calif.	S. H. Babington	667	310	21	6	1	7/1	1-3	75.00
San Joaquin General Hospital ★	French Camp, Calif.	H. J. Bolinger	3,416	3,126	188	29	3	7/1	1-3	200.00
General Hospital of Fresno County ★	Fresno, Calif.	C. M. Vanderburgh	661	3,113	39	6	4	....	1-4	205.00
Seaside Memorial Hospital ★[4]	Long Beach, Calif.	C. A. Lauer	1,695	.....	14	1	4	1/1, 7/1	1-3	100.00
California Hospital ★[4]	Los Angeles	W. H. Olds	2,706	158	58	31	5	7/1	3	100.00
Cedars of Lebanon Hospital ★[4]	Los Angeles	L. Felger	2,600	5,837	68	24	2	7/1	1	100.00
Hospital of the Good Samaritan ★[4]	Los Angeles	G. L. Chaffin	6,240	2,016	87	36	3	7/1	3	200.00
Los Angeles County Hospital ★[4]	Los Angeles	L. B. Sherry	3,849	6,938	307	92	7	Varies	3½	157.20
Queen of Angels Hospital ★	Los Angeles	W. J. Sullivan	2,067	228	..	27	1	7/1	3	100.00
St. Vincent's Hospital ★	Los Angeles	F. J. Breslin	2,586	.....	27	11	3	7/1	1-3	.....
Santa Fe Coast Lines Hospital ★	Los Angeles		1,211	.....	25	8	2	7/1	1	195.00
White Memorial Hospital ★	Los Angeles	G. Thomason	889	9,241	..	..	6	....	1-3	135.00
Highland-Alameda County Hospital ★[4]	Oakland, Calif.	W. W. Crane and S. Everingham	831	.....	73	32	4	7/1	1-3	135.00
Peralta Hospital	Oakland, Calif.	T. C. Lawson	1,850	.....	17	1	4	7/1	1-2	75.00
Permanente Foundation Hospital ★[4]	Oakland, Calif.	C. Cutting	1,248	9,260	18	16	3	7/1	1	.....
Samuel Merritt Hospital	Oakland, Calif.	W. Mitchell and W. W. Crane	1,419	.....	18	11	3	7/1	1-3	110.00
Collis P. and Howard Huntington Memorial Hospital ★	Pasadena, Calif.	A. C. Pattison	3,231	.....	49	..	2	7/1	1	85.00
San Bernardino County Charity Hospital ★	San Bernardino, Calif.	C. J. Clock	549	4,743	31	22	2	1/1	1-2	190.00
San Diego County General Hospital ★	San Diego, Calif.	H. Holder	2,016	3,688	169	39	3	7/1	1	187.00
Children's Hospital ★[4]	San Francisco	A. K. Kilgore	633	1,533	12	3	1	7/1	1-2	50.00
Franklin Hospital ★[4]	San Francisco	T. F. Mullen	1,520	.....	7	4	8	7/1	1	200.00
French Hospital ★[4]	San Francisco	W. L. Rogers	1,647	.....	..	..	1	7/1	1	.....
Mary's Help Hospital ★	San Francisco	E. Carlson	2,640	8,573	26	13	2	7/1	1	150.00
Mount Zion Hospital ★[4]	San Francisco	F. I. Harris	888	.....	37	24	3	7/1	1	75.00
St. Luke's Hospital ★[4]	San Francisco	G. D. Delprat	5,264[b]	585[b]	..	..	3	7/1	1	90.00
St. Mary's Hospital ★	San Francisco	E. Butler	.....	.....	..	..	4	4/1	1	100.00
San Francisco Hospital ★[4]	San Francisco	H. Brunn and L. Eloesser	2,237	.....	227	1	11	....	1	175.00
Southern Pacific General Hospital ★	San Francisco	W. W. Washburn	1,317[b]	.....	..	..	4	....	1-3	.....
Stanford University Hospitals ★[4]	San Francisco	E. F. Holman	1,603	10,319	65	31	10	7/1	1-2	50.00
U. S. Marine Hospital ★	San Francisco	S. P. Cooper	1,840	.....	5	3	3	Varies	1-4	.....
University of California Hospital ★[4]	San Francisco	H. C. Naffziger	1,595	9,495	34	22	13	7/1	1	50.00
Santa Clara County Hospital ★	San Jose, Calif.	C. Sullivan	.....	.....	..	..	1	....	1	225.00
Santa Barbara Cottage Hospital ★[4]	Santa Barbara, Calif.	I. Wills	646	.....	8	3	2	4/1, 10/1	1	100.00
Childrens Hospital	Denver	G. B. Packard	547[b]	.....	..	..	1	7/1	1	50.00
Colorado General Hospital ★	Denver	G. B. Packard	513	2,781	37	24	4	7/1	1-3	85.00
St. Luke's Hospital ★	Denver	C. W. Metz	1,337	.....	54	21	2	4/1	1-2	50.00
Corwin Hospital ★	Pueblo, Colo.	S. B. Potter and G. E. A. Connell	1,212	13,365	33	16	1	7/1	1	75.00
Bridgeport Hospital ★	Bridgeport, Conn.		3,487[b]	.....	..	..	1	....	1	.....
Hartford Hospital ★[4]	Hartford, Conn.	C. D. Deming	4,413	.....	87	38	8	7/1	1-5	50.00
St. Francis Hospital ★	Hartford, Conn.		4,181	.....	64	14	2	7/1	3	.....
Grace-New Haven Community Hospital										
Grace Unit ★	New Haven, Conn.	R. W. Nichols	1,563	.....	28	..	3	7/1	3	40.00
New Haven Unit ★[4]	New Haven, Conn.	S. Harvey	1,935	10,162	..	..	4	7/1	1	40.00
Hospital of St. Raphael ★	New Haven, Conn.	W. F. Verdi	1,868	515	141	22	3	7/1	1	75.00
Lawrence and Memorial Associated Hospitals ★[4]	New London, Conn.	G. P. Cheney and C. Kaufman	892	.....	36	7	1	8/1	1	150.00
Delaware Hospital ★	Wilmington, Del.	L. J. Jones	430	2,421	41	30	1	3/1	1	125.00
Memorial Hospital ★	Wilmington, Del.	J. G. Spackman	1,210	1,034	35	23	3	....	1-3	.....
Central Dispensary and Emergency Hosp. ★	Washington, D. C.	J. H. Lyons	2,903	597	61	24	7	7/1	1	50.00
Doctors Hospital ★	Washington, D. C.	C. S. White	1,930	.....	43	30	2	7/1	1-2	100.00
Freedmen's Hospital ★[4]	Washington, D. C.	C. R. Drew	1,211	5,814	185	16	9	7/1	1-6	75.00
Gallinger Municipal Hospital ★[4]	Washington, D. C.	B. Blades	1,160	5,975	59	19	4	7/1	1-3	75.00
Garfield Memorial Hospital ★[4]	Washington, D. C.	H. H. Kerr	4,593	1,407	..	..	4	....	1	75.00
Georgetown University Hospital ★	Washington, D. C.	F. R. Sanderson	1,363	1,068	24	8	2	7/1	1-2	75.00
Providence Hospital ★	Washington, D. C.	F. R. Sanderson	3,199	1,235	49	25	3	....	1	.....
Sibley Memorial Hospital ★[4]	Washington, D. C.	P. S. Putzki	4,712	.....	87	..	4	....	1-3	100.00
Duval County Hospital ★	Jacksonville, Fla.	E. Jelks	777	.....	57	22	3	....	1	.....
Riverside Hospital [4]	Jacksonville, Fla.	H. A. Peyton	800[b]	7,034[b]	..	..	1	10/1	1	.....
St. Vincent's Hospital ★	Jacksonville, Fla.	F. J. Waas	1,202	.....	24	11	2	7/1	1	125.00
James M. Jackson Memorial Hosp. ★	Miami, Fla.		3,246	7,804	116	55	3	7/1	1	93.50
Georgia Baptist Hospital ★	Atlanta, Ga.	B. L. Shackleford	4,222	.....	..	..	1	7/1	1	.....
Grady Memorial Hospital ★[4]	Atlanta, Ga.	D. C. Elkin	3,272	41,481	189	59	20	7/1	1	20.00
Piedmont Hospital ★[4]	Atlanta, Ga.	F. McRae	2,443	.....	30	10	1	7/1	1-2	75.00
St. Joseph's Infirmary ★	Atlanta, Ga.	G. P. Huguley	2,839	1,102	30	11	2	7/1	1-3	115.00
University Hospital ★[4]	Augusta, Ga.	J. H. Sherman	2,125	2,182	57	7	9	7/1	1-4	40.00
Emory University Hospital ★	Emory University, Ga.	D. C. Elkin	14,314	.....	..	..	5	....	1	50.00
American Hospital ★[4]	Chicago	M. Thorek	1,657[b]	.....	..	..	1	4/1	1-2	50.00
Augustana Hospital ★	Chicago	N. M. Percy	2,007	3,000	63	24	2	7/1	1-3	50.00
Cook County Hospital ★[4]	Chicago	K. A. Meyer	8,560	9,762	679	85	16	Varies	1-3	27.50
Grant Hospital ★[4]	Chicago	L. Seed and E. W. Fischmann	.....	.....	..	..	1	7/1	1-3	125.00
Henrotin Hospital ★[4]	Chicago	J. A. Graham	740	.....	22	11	2	7/1	1-2	100.00
Illinois Masonic Hospital ★[4]	Chicago	P. Shambaugh	970	.....	47	14	2	....	1	.....
Lutheran Deaconess Home and Hospital ★	Chicago	G. H. Schroeder	4,148	.....	75	14	1	....	1	100.00
Mercy Hospital-Loyola Univ. Clinics ★	Chicago	H. A. Oberhelman	2,364	1,722	87	36	3	....	1-2	25.00
Michael Reese Hospital ★[4]	Chicago	N. Crohn	2,677	3,315	..	..	7	....	1-3	25.00

Numerical and other references will be found on page 1375.

25. SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated •	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies •	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Mount Sinai Hospital ★[4]	Chicago		1,638	1,670	27	13	3	7/1	1	50.00
Norwegian-American Hospital ★[4]	Chicago	M. Lichtenstein	927	.....	10	4	2	1/1, 7/1	1	25.00
Passavant Memorial Hospital ★[4]	Chicago	L. Davis	1,047	10,958	24	14	4	....	1	None
Presbyterian Hospital ★	Chicago	V. C. David	1,976	2,065	39	20	5	7/1	1-3	25.00
Provident Hospital ★[4]	Chicago	U. G. Dailey	973	910	41	21	2	....	1	.....
Ravenswood Hospital ★	Chicago	R. F. Greening	2,433	2,015	38	10	1	10/1	1-3	150.00
Research and Educational Hospitals ★	Chicago	W. H. Cole	811	9,137	43	..	4	7/1	1-3	55.00
St. Anne's Hospital ★	Chicago	G. F. Thompson	1,321	.....	34	6	1	7/1	1+	100.00
St. Elizabeth Hospital ★	Chicago	M. G. Luken	7,970	.....	88	25	2	....	3	60.00
St. Joseph Hospital ★[4]	Chicago	H. McKenna	912	.....	15	8	1	....	1	.....
St. Luke's Hospital ★[4]	Chicago	E. L. Strohl	4,190	1,527	97	51	11	7/1	1-3	25.00
St. Mary of Nazareth Hospital ★	Chicago	T. Larkowski	1,941[a]	.....	18	10	3	....	1	.....
U. S. Marine Hospital ★	Chicago	K. E. Gamm	1,124[b]	1,935[b]	..	..	1	....	1	.....
University of Chicago Clinics ★[4]	Chicago	D. B. Phemister	1,730	13,113	64	51	5	7/1	1-6	25.00
Wesley Memorial Hospital ★[4]	Chicago	R. W. McNealy	2,336	.....	24	11	10	1/1, 7/1	1-3	25.00
Women's and Children's Hospital ★[4]	Chicago	E. Parsons	470	.....	20	8	1	....	1	.....
Evanston Hospital ★	Evanston, Ill.	F. Christopher	2,062	1,565	29	18	3	....	3	50.00
St. Francis Hospital ★	Evanston, Ill.	C. E. Pope	1,653	.....	45	24	2	....	1	75.00
Little Company of Mary Hospital ★	Evergreen Park, Ill.	R. J. Bennett	3,315	.....	28	6	2	12/1	1	100.00
Veterans Administration Hospital	Hines, Ill.	C. B. Puestow	4,252	.....	289	42	20	....	1-3	275.00
St. Francis Hospital ★[4]	Peoria, Ill.	W. L. Bowen	1,626	6,110	22	8	2	1/1, 4/1	1-2	150.00
Indianapolis City Hospital ★	Indianapolis	M. N. Hadley	1,223	6,923	55	23	5	....	1	.....
Indiana University Medical Center ★[4]	Indianapolis	W. D. Gatch	2,841	8,154	111	58	7	....	1	33.33
Methodist Hospital ★	Indianapolis	W. E. Gabe	4,015	.....	72	25	4	7/1	1-2	200.00
Ball Memorial Hospital ★[4]	Muncie, Ind.	W. C. Moore	2,998	.....	112	30	3	7/1	1-2	100.00
Iowa Methodist Hospital ★	Des Moines, Iowa	J. B. Priestley	979[b]	751[b]	..	..	2	....	1-3	.....
University Hospitals ★[4]	Iowa City	F. R. Peterson	3,022	4,227	132	77	17	....	1	40.00
St. Margaret's Hospital ★	Kansas City, Kan.	C. C. Nesselrode	814	482	40	30	3	7/1	3	50.00
University of Kansas Hospitals ★[4]	Kansas City, Kan.	T. G. Orr	821	2,630	34	18	4	....	1	.....
St. Francis Hospital ★	Wichita, Kan.	A. P. Gearhart	3,093	.....	79	39	1	....	1	.....
Wesley Hospital ★	Wichita, Kan.	A. L. Crittenden	1,434	.....	32	11	1	2/1	1-3	150.00
St. Joseph's Hospital ★	Lexington, Ky.		4,280	.....	112	31	3	7/1	1-3	90.00
Louisville General Hospital ★	Louisville, Ky.	R. A. Griswold	1,820	11,401	101	39	14	4/1	1-6	45.00
Norton Memorial Infirmary ★	Louisville, Ky.	P. R. Imes	905	.....	25	8	2	7/1	1-2	75.00
St. Joseph's Infirmary ★	Louisville, Ky.	I. Abell Sr.	6,356	2,373	106	25	4	7/1	1-4	75.00
Charity Hospital of Louisiana ★[4]	New Orleans		7,924	23,604	421	117	27	7/1	1-4	25.00
Hotel Dieu, Sisters' Hospital ★	New Orleans		1,740	.....	33	8	2	7/1	1	100.00
Touro Infirmary ★	New Orleans	J. D. Rives	3,896	5,059	98	57	5	7/1	1	17.50
U. S. Marine Hospital ★[4]	New Orleans	O. C. Williams	2,129	7,080	21	14	2	1/1, 7/1	4	101.43
Shreveport Charity Hospital ★[4]	Shreveport, La.	J. E. Heard	2,076	4,532	75	29	7	7/1	1-3	60.00
Maine General Hospital ★	Portland, Me.	C. M. Robinson	2,052	919	75	22	6	....	1+	50.00
Baltimore City Hospitals ★[4]	Baltimore	T. B. Aycock	2,106	2,619	177	70	5	7/1	1	35.00
Bon Secours Hospital ★[4]	Baltimore	G. Stewart	1,061	456	20	3	2	4/1	1-3	76.00
Church Home and Hospital ★[4]	Baltimore	T. S. Cullen	3,535	1,161	62	30	4	7/1	1	45.00
Franklin Square Hospital ★[4]	Baltimore	E. S. Johnson	2,113	3,832	28	17	3	....	1	.....
Hospital for Women ★[4]	Baltimore	W. Rienhoff	772	1,503	15	6	3	4/1	1	.....
Johns Hopkins Hospital ★	Baltimore	A. Blalock	3,016	45,478	117	68	11	7/1	1-4+	.....
Maryland General Hospital ★[4]	Baltimore	R. F. Chenowith	2,791	1,563	88	21	7	7/1	1-4	50.00
Mercy Hospital ★	Baltimore	W. D. Wise	2,065	.....	72	20	5	7/1	1	50.00
Provident Hospital and Free Dispensary ★[4]	Baltimore	S. McLanahan	909	.....	..	..	2	....	1	.....
St. Agnes Hospital ★[4]	Baltimore	G. A. Stewart and R. T. Shakelford	1,524	635	48	12	4	....	1	.....
St. Joseph's Hospital ★	Baltimore	W. R. Geraghty	1,953	4,930	51	14	5	7/1	2-3	50.00
Sinai Hospital ★[4]	Baltimore	H. M. Kern	2,433	.....	44	35	5	....	1	35.00
South Baltimore General Hospital ★[4]	Baltimore	O. S. Lloyd	1,855	4,154	71	13	4	....	1	.....
Union Memorial Hospital ★	Baltimore	J. M. T. Finney Jr.	4,705[b]	6,784[b]	..	..	8	7/1	1	.....
U. S. Marine Hospital ★	Baltimore	J. D. Lane Jr.	2,522	4,169	12	4	5	7/1	1-3	184.16
University Hospital ★[4]	Baltimore	A. M. Shipley	2,573	9,678	93	21	9	7/1	1-2	None
West Baltimore General Hospital ★	Baltimore	N. C. Marvel	1,055	4,475	24	..	4	....	1-3	.....
Suburban Hospital ★	Bethesda, Md.		1,256	441	20	9	1	7/1	1-2	100.00
Beverly Hospital ★	Beverly, Mass.	P. P. Johnson	2,116	3,626	39	31	2	....	2-3	50.00
Beth Israel Hospital ★	Boston	C. G. Nixter	2,480	4,045	72	48	8	7/1	1-3	41.66
Boston City Hospital ★[4]	Boston	R. C. Cochrane	10,491	58,760	635	61	9	....	1-2	50.00
Children's Hospital ★[4]	Boston	F. Ingraham	1,492	12,310	32	26	4	Varies	1	.....
Lahey Clinic	Boston	F. H. Lahey	4,000[b]	.....	..	..	18	Varies	1-2	.....
Massachusetts General Hospital ★	Boston	E. D. Churchill and A. W. Allen	4,665	16,540	97	58	35	7/1	1-3	41.67
Massachusetts Memorial Hospitals ★[4]	Boston	R. H. Smithwick	3,257	2,380	18	10	3	4/1	1	50.00
New England Hospital for Women and Children ★[4]	Boston	G. E. Rockford	1,107	4,570	12	..	1	1/1	1	50.00
Peter Bent Brigham Hospital ★	Boston	E. C. Cutler	2,467	27,000	76	45	9	Varies	1	.....
U. S. Marine Hospital ★	Boston	R. L. Waugh	3,075	11,642	29	12	4	7/1	4	76.00
Mount Auburn Hospital ★[4]	Cambridge, Mass.	H. P. Stevens	1,735	2,272	36	15	2	7/1	1	50.00
Truesdale Hospital	Fall River, Mass.	W. G. Atwood	2,073	.....	27	14	4	1/1, 7/1	1	100.00
Newton-Wellesley Hospital ★[4]	Newton, Mass.	R. I. Smith	2,518	798	59	17	1	8/5	1-3	100.00
Salem Hospital ★[4]	Salem, Mass.	W. G. Phippen	2,290	1,870	61	..	1	....	1	50.00
Memorial Hospital ★	Worcester, Mass.	B. H. Alton	2,353	658	43	14	1	....	1+	125.00
St. Vincent Hospital ★	Worcester, Mass.	J. M. Fallon	2,280	403	45	9	2	7/1	1	75.00
Worcester City Hospital ★	Worcester, Mass.	B. F. Andrews	2,376	3,529	114	17	2	....	1	50.00
St. Joseph's Mercy Hospital ★	Ann Arbor, Mich.	H. Beebe and F. A. Coller	1,112	.....	47	13	2	....	2	125.00
University Hospital ★[4]	Ann Arbor, Mich.	F. A. Coller	2,053	11,434	100	62	40	....	1	101.40
Leila Y. Post Montgomery Hospital ★	Battle Creek, Mich.	R. L. Mustard	879	1,750	26	10	4	7/1	1-3	100.00
Alexander Blain Hospital [4]	Detroit	A. W. Blain and J. H. Blain	1,121	14,578	23	11	8	....	1	.....
Charles Godwin Jennings Hospital ★	Detroit	J. B. Hartzell	.....	.....	..	..	2	7/1	1-3	200.00
City of Detroit Receiving Hospital ★[4]	Detroit	C. Johnston	2,916	13,071	241	53	11	7/15	1	149.67
Grace Hospital ★	Detroit	C. S. Kennedy	2,411	1,766	55	21	6	7/1	1-3	75.00
Harper Hospital ★[4]	Detroit	W. D. Barrett	8,734[b]	.....	..	..	20	....	1	113.00
Henry Ford Hospital ★[4]	Detroit	R. D. McClure	9,241	120,017	119	55	48	7/1	1-5	200.00
Mount Carmel Mercy Hospital ★	Detroit	L. J. Gariepy	7,235	.....	101	28	9	7/1	1-4	100.00
Providence Hospital ★	Detroit	R. Bookmeyer	4,145	.....	42	22	4	....	1	.....
St. Mary's Hospital ★	Detroit	G. K. Glasgow	4,633	911	56	37	4	....	3	140.00
U. S. Marine Hospital ★	Detroit		3,307[b]	9,930[b]	..	..	2	....	1-2	.....
Women's Hospital ★	Detroit	W. E. Johnston	4,276	.....	15	14	1	7/1	1-4	100.00
Wayne County General Hospital and Infirmary ★[4]	Eloise, Mich.	R. V. Walker	2,232	8,479	122	37	7	7/1	1	197.50

Numerical and other references will be found on page 1375.

25. SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated[a]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies[a]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Hurley Hospital ★	Flint, Mich.	A. H. Kretchmar	1,555	.....	33	10	3	7/1	1	.....
Blodgett Memorial Hospital ★	Grand Rapids, Mich.	J. D. Miller	1,306	.....	23	13	3	10/1	1-3	175.00
Butterworth Hospital ★[4]	Grand Rapids, Mich.	D. Chandler	4,314	.....	94	33	3	7/1	1-3	100.00
St. Mary's Hospital ★	Grand Rapids, Mich.	S. L. Moleski	3,636	362	90	38	3	....	3	125.00
Highland Park General Hospital ★	Highland Park, Mich.	F. C. Witter	1,485	60	25	13	3	7/1	1	150.00
Bronson Methodist Hospital ★	Kalamazoo, Mich.	H. C. Jackson	769	97	4	2	3	7/1	3	150.00
St. Mary's Hospital ★	Duluth, Minn.	F. J. Elias	1,504	.....	43	32	1	....	1	.....
Lutheran Deaconess Home and Hospital	Minneapolis	A. G. Andersen	2,806	.....	23	5	1	1/1	1	175.00
Minneapolis General Hospital ★[4]	Minneapolis	A. A. Zierold	953	3,439	82	43	12	1/1, 7/1	1-3	100.00
University Hospitals ★[4]	Minneapolis	O. H. Wangensteen	1,274	6,172	103	80	16	7/1	1-3	100.00
Mayo Foundation	Rochester, Minn.	D. C. Balfour	(See page 1375)				135	....	1	.....
Ancker Hospital ★	St. Paul	A. R. Colvin	1,141	1,690	110	89	3	1/1	3	91.50
Charles T. Miller Hospital ★	St. Paul	H. B. Zimmerman	1,681	1,919	..	..	2	1/1	1-3	100.00
Vicksburg Hospital	Vicksburg, Miss.	W. H. Parsons	2,057	18,650	23	13	3	1/1	3-5	50.00
St. Louis County Hospital ★	Clayton, Mo.	L. Will	970	6,387	96	41	3	7/1	1-3	60.00
Ellis Fischel State Cancer Hospital	Columbia, Mo.	E. D. Sugarbaker	1,145	5,603	41	31	4	7/1	1-2	50.00
Kansas City General Hospital. No. 1 ★	Kansas City, Mo.	C. J. Hunt	1,019	3,658	81	27	7	7/1	2-4	50.00
Research Hospital ★[4]	Kansas City, Mo.	C. J. Hunt	2,057	.....	41	23	2	3/1	1	.....
St. Joseph Hospital ★	Kansas City, Mo.	V. T. Williams	2,071[b]	.....	..	..	1	....	1-3	75.00
St. Luke's Hospital ★	Kansas City, Mo.	C. B. Schutz	1,813[b]	2,166[b]	..	..	1	....	1	.....
St. Mary's Hospital ★	Kansas City, Mo.	J. E. Castles	2,264	.....	51	36	2	7/1	1	.....
Barnes Hospital ★	St. Louis	E. A. Graham	1,646	5,922	69	51	9	7/1	1-4	25.00
De Paul Hospital ★	St. Louis	H. A. Hassett	1,643	117	68	12	2	7/1	1-2	.....
Homer G. Phillips Hospital ★	St. Louis	R. Elman	1,981	6,417	152	25	5	7/1	1	50.00
Jewish Hospital ★[4]	St. Louis	M. W. Myer	2,071	.....	51	20	2	....	1	50.00
Missouri Baptist Hospital ★	St. Louis	H. Talbott	3,178	.....	..	..	4	7/1	1-3	70.00
St. Anthony's Hospital ★	St. Louis	F. Tainter	3,028	.....	53	..	1	7/1	1	50.00
St. John's Hospital ★	St. Louis	W. P. Glennon	2,749	1,007	71	24	3	7/1	1-2	50.00
St. Louis City Hospital ★[4]	St. Louis		2,940	6,407	286	111	15	7/1	1	86.00
St. Luke's Hospital ★	St. Louis	G. L. Krause	2,089	.....	..	..	2	7/1	1	75.00
St. Mary's Group of Hospitals ★	St. Louis	J. W. Stewart	2,404	5,715	93	45	6	Varies	3	35.00
Montana Deaconess Hospital ★	Great, Falls, Mont.	L. L. Howard	728	290	4	1	1	7/1, 8/1	1-2	250.00
Bishop Clarkson Memorial Hospital ★	Omaha	C. H. Waters	1,298[b]	.....	..	..	1	....	1	.....
Creighton Memorial St. Joseph's Hosp. ★[4]	Omaha	C. McMartin	5,770	2,699	59	25	1	7/1	1-2	100.00
Nebraska Methodist Hospital ★	Omaha	J. Brush	620[b]	.....	..	..	1	....	1	.....
University of Nebraska Hospital ★[4]	Omaha	J. J. Keegan	358	1,193	17	17	2	7/1	1-3	50.00
Atlantic City Hospital ★	Atlantic City, N. J.	H. I. Silvers	3,370	21,978	132	40	1	7/1	1	.....
Cooper Hospital ★	Camden, N. J.	I. E. Delbert	1,834	6,081	121	47	2	....	1-2	83.33
West Jersey Hospital ★	Camden, N. J.	H. W. Jack	1,092	2,438	72	18	3	7/1	2	75.00
Hackensack Hospital ★	Hackensack, N. J.	G. M. Finke	.....	3,217	26	2	1	7/1	1	100.00
Jersey City Hospital ★	Jersey City, N. J.	E. Burke	2,929	20,944	165	24	4	Varies	1-3	35.00
Mountainside Hospital ★[4]	Montclair, N. J.	R. T. Hobart	2,878	3,437	88	37	1	7/1	1	100.00
Burlington County Hospital ★	Mount Holly, N. J.	T. J. Summey	946	1,856	46	22	2	7/1	1-2	100.00
Hospital of St. Barnabas and for Women and Children ★	Newark, N. J.		2,445	3,613	..	..	3	7/1	1-3	100.00
Newark Beth Israel Hospital ★	Newark, N. J.		2,580[b]	687[b]	..	..	1	....	1	.....
Presbyterian Hospital [4]	Newark, N. J.		2,102	154	67	..	4	1/1, 7/1	1-2	200.00
Albany Hospital ★[4]	Albany, N. Y.	E. H. Campbell Jr.	2,530	.....	75	43	5	7/1	1	41.67
Binghamton City Hospital ★	Binghamton, N. Y.		2,023	.....	40	9	1	7/1	1	100.00
Beth Moses Hospital ★[4]	Brooklyn		1,654	2,836	77	3	2	1/1, 7/1	1-2	125.00
Brooklyn Hospital ★[4]	Brooklyn	W. H. Field	2,194	3,196	73	15	3	7/1	1-3	25.00
Coney Island Hospital ★[4]	Brooklyn	D. A. McAteer	2,298	34,327	85	10	3	1/1, 7/1	1	70.00
Cumberland Hospital ★[4]	Brooklyn	H. T. Wikle	2,273	12,466	115	16	3	7/1	1	70.00
Greenpoint Hospital ★[4]	Brooklyn	J. Smith Jr.	1,572	7,689	63	14	2	7/1	1	120.00
Jewish Hospital ★[4]	Brooklyn		1,926	5,922	50	14	5	....	4	30.00
Kings County Hospital ★	Brooklyn	T. Tenopyr and R. Barber	13,901	31,778	598	102	7	7/1	1-3	70.00
Long Island College Hospital ★[4]	Brooklyn	E. Goetsch	2,245	8,606	41	16	5	7/1	1-6	25.00
Methodist Hospital ★	Brooklyn	H. F. Graham	2,289	4,586	73	9	2	7/1	1-4	50.00
Norwegian Lutheran Deaconesses' Home and Hospital ★[4]	Brooklyn	R. W. Tate and D. Livingstone	.....	.....	..	..	1	....	1	.....
St. John's Hospital ★	Brooklyn	M. N. Foote	1,866	4,532	44	..	3	7/1	1-3	50.00
St. Mary's Hospital ★[4]	Brooklyn	T. M. Brennan	2,276	3,139	47	6	1	4/1	1	60.00
Buffalo General Hospital ★	Buffalo	W. L. Machemer	3,003	874	94	41	6	7/1	1-2	25.00
Children's Hospital	Buffalo	W. L. Machemer	696	.....	11	7	1	....	1	25.00
Deaconess Hospital ★	Buffalo		4,943	987	82	30	4	7/1	1-3	60.00
Edward J. Meyer Memorial Hospital ★[4]	Buffalo	J. D. Stewart	1,429	1,984	120	51	13	7/1	1-5	100.00
Millard Fillmore Hospital ★	Buffalo	H. N. Kenwell	2,793	.....	47	14	8	....	1-4	50.00
Mary McClellan Hospital	Cambridge, N. Y.		1,100	3,525	27	10	1	7/1	1	.....
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	A. S. Taylor	918	.....	24	16	2	7/1	1-3	50.00
Mary Imogene Bassett Hospital ★	Cooperstown, N. Y.	M. A. McIver	718	5,247	26	12	2	7/1	1-2	83.33
Meadowbrook Hospital ★	Hempstead, N. Y.	A. S. Warinner	962	.....	65	44	2	4/1	1-2	115.00
Mary Immaculate Hospital ★	Jamaica, N. Y.	F. N. Dealy	654	873	11	5	1	7/1	1-3	120.00
Queens General Hospital ★[4]	Jamaica, N. Y.	F. N. Dealy	2,849	9,031	232	109	6	....	1-3	70.00
Charles S. Wilson Memorial Hospital ★[4]	Johnson City, N. Y.	F. G. Moore	4,243	.....	43	14	1	7/1	1	200.00
New Rochelle Hospital ★	New Rochelle, N. Y.	G. C. Adie	2,271	.....	..	..	2	7/1	1-3	100.00
Bellevue Hosp. Div. I—Columbia Univ. ★[4]	New York City	F. B. Berry	2,339	10,738	98	36	5	1/1, 7/1	3	70.00
Bellevue Hosp., Div. II—Cornell Univ. ★[4]	New York City	G. S. Dudley	2,300	11,213	81	37	3	7/1	1	70.00
Bellevue Hosp., Div. III—N. Y. Univ. ★[4]	New York City	J. H. Mulholland	2,396	10,035	88	32	8	7/1	4	70.00
Bellevue Hosp., Div. IV—Open Division ★[4]	New York City	A. S. McQuillan	2,258	9,116	84	47	6	7/1	1	70.00
Beth Israel Hospital ★[4]	New York City	P. Klingenstein	1,189	3,667	47	14	4	7/1	1-4	50.00
Bronx Hospital ★[4]	New York City	S. Cohn	2,271	2,649	47	7	6	7/1	1-3	75.00
Flower and Fifth Avenue Hospitals ★[4]	New York City	J. Winfield	2,367	4,252	40	10	9	7/1	1	.....
Fordham Hospital ★[4]	New York City	L. Marton	.....	.....	..	..	6	7/1	1	70.00
Gouverneur Hospital ★[4]	New York City	M. G. Elias	731	9,595	58	11	4	....	1	70.00
Harlem Hospital ★[4]	New York City	L. T. Wright	4,547	15,239	229	26	8	1/1, 7/1	1	70.00
Hospital for Special Surgery	New York City	C. G. Burdick	1,157	2,501	11	4	3	....	1	50.00
Knickerbocker Hospital ★	New York City	R. H. Patterson	.....	.....	..	..	1	7/1	1+	110.00
Lenox Hill Hospital ★[4]	New York City	J. C. A. Gerster and O. C. Prickhardt	2,622	5,302	72	27	6	7/1	1	50.00
Metropolitan Hospital ★[4]	New York City	J. Winfield	1,691	5,177	111	13	5	4/1, 7/1	1	50.00
Montefiore Hospital for Chronic Diseases ★[4]	New York City	S. Standard	383	.....	58	24	3	1/1	1	50.00

Numerical and other references will be found on page 1375.

25. SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated*	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies*	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Morrisania City Hospital ★[4]	New York City	G. Milani and P. Daly	1,088	3,916	66	24	4	7/1	1	70.00
Mount Sinai Hospital ★[4]	New York City		.....	.....	..	..	11	1/1, 7/1	1+	50.00
New York City Hospital ★[4]	New York City	I. Kross	2,017	7,930	134	32	5	7/1	1-3	70.00
New York Hospital ★[4]	New York City	F. Glenn	2,941	43,794	70	44	23	7/1	1-7	25.00
New York Infirmary for Women and Children ★[4]	New York City	A. Hubert	498	1,944	3	1	2	7/1	1	75.00
New York Polyclinic Medical School and Hospital ★	New York City	R. E. Brennan	1,637	.....	32	6	12	7/1	3	25.00
New York Post-Graduate Medical School and Hospital ★	New York City	T. H. Russell	3,379	13,814	113	40	22	Varies	1	20.00
Presbyterian Hospital ★[4]	New York City	A. O. Whipple	3,871	61,063	129	..	19	....	1-4	41.66
Roosevelt Hospital ★	New York City		3,288	8,920	151	33	14	7/1	1-3	25.00
St. Clare's Hospital ★	New York City	W. V. Healey	6,652	6,811	91	38	3	9/1	3	25.00
St. Luke's Hospital ★	New York City	W. F. MacFee	2,769	13,506	105	36	10	Varies	1-5	50.00
St. Vincent's Hospital ★[4]	New York City	G. R. Stuart	3,847	11,775	194	63	3	7/1	1-3	50.00
Veterans Administration Hospital	New York City	R. B. Moreland	2,006	.....	47	16	12	7/1	1-4	303.33
Genesee Hospital ★	Rochester, N. Y.	S. J. Stabins	3,083	.....	74	34	2	....	1	.....
Highland Hospital ★[4]	Rochester, N. Y.	W. A. Calihan	1,840	379	44	23	3	7/1	1-2	100.00
Rochester General Hospital ★[4]	Rochester, N. Y.	W. A. Fenstermacher	3,142	4,033	42	32	7	7/1	1-3	60.00
St. Mary's Hospital ★[4]	Rochester, N.Y.	L. F. Simpson	5,342	3,993	..	..	2	7/1	1-3	125.00
Strong Memorial and Rochester Municipal Hospitals ★[4]	Rochester, N. Y.	J. J. Morton	2,336	13,527	148	103	14	7/1	1-4	41.66
Hospital of the Good Shepherd ★	Syracuse, N. Y.	A. B. Rafil	.....	.....	..	..	3	....	1-2	50.00
Grasslands Hospital ★[4]	Valhalla, N. Y.	G. C. Adie	371	3,143	40	23	4	7/1	1-3	75.00
Charlotte Memorial Hospital ★[4]	Charlotte, N. C.	T. D. Sparrow	1,457	.....	38	21	4	1/1, 7/1	1	75.00
Duke Hospital ★[4]	Durham, N. C.	D. Hart	2,517	15,759	53	27	13	1/1	1	.....
Watts Hospital ★	Durham, N. C.	W. B. McCutcheon	2,121	3,725	30	4	5	7/1	1-4	50.00
Rutherford Hospital	Rutherfordton, N. C.	R. H. Crawford	676	7,287	20	..	1	....	1	.....
James Walker Memorial Hospital ★	Wilmington, N. C.	J. W. Hooper and H. A. Codington	1,617	8,271	32	16	1	Varies	1-2	200.00
City Hospital ★	Winston-Salem, N. C.	J. F. Marshall	4,933	5,725	104	21	6	....	1	75.00
North Car	Winston-Salem, N. C.	H. H. Bradshaw	1,008	5,410	26	12	11	....	1-3	.....
Bismarck	Bismarck, N. D.	N. O. Ramstad	824	.....	7	2	2	7/1	1½-3	100.00
St. Luke's	Fargo, N. D.		2,030	1,567	12	..	1	7/1	1-2	100.00
Trinity Hospital ★	Minot, N. D.	A. L. Cameron	730	4,915	17	13	1	....	1	150.00
Children's Hospital	Akron, Ohio		1,124	90	12	7	1	7/1	1-2	100.00
City Hospital ★	Akron, Ohio		2,126	.....	49	19	6	....	1	100.00
Peoples Hospital ★	Akron, Ohio	J. D. Smith	1,678	119	56	15	3	7/1	1-2	150.00
St. Thomas Hospital ★	Akron, Ohio	E. C. Banker	1,810	440	21	5	3	7/1	1	125.00
Aultman Hospital ★	Canton, Ohio	L. L. Lawrence	3,710	.....	68	32	9	7/1	1-4	75.00
Mercy Hospital ★	Canton, Ohio	A. W. Warren	3,698	.....	81	10	3	1/1, 7/1	1-3	100.00
Christ Hospital ★	Cincinnati	P. W. Sutton	2,185	3,045	101	43	6	7/1	1-3	75.00
Cincinnati General Hospital ★	Cincinnati	B. N. Carter	3,437	18,929	336	114	17	7/1	1-6	.....
Deaconess Hospital ★[4]	Cincinnati		2,447	.....	38	11	1	10/1	1	75.00
Good Samaritan Hospital ★	Cincinnati	L. B. Johnston	7,989	1,092	78	26	6	7/1	1-4	105.00
Jewish Hospital ★	Cincinnati	J. L. Ransohoff	5,001	.....	60	23	5	7/1	1-4	75.00
St. Mary's Hospital ★	Cincinnati	J. J. Maloney	1,525	693	32	10	3	7/1	1-3	105.00
City Hospital ★[4]	Cleveland	C. H. Lenhart	2,706	1,870	203	104	18	7/1	1-4	50.00
Cleveland Clinic Foundation Hospital	Cleveland	T. E. Jones	2,560	19,913	41	21	14	7/1	1-3	100.00
Fairview Park Hospital ★	Cleveland	H. W. Masenhimer	1,078	667	26	10	2	7/1	1	100.00
Lutheran Hospital ★[4]	Cleveland	F. S. Gibson	2,514	.....	42	18	4	7/1	1-2	100.00
Mount Sinai Hospital ★[4]	Cleveland	S. O. Freedlander	2,037	1,127	50	21	4	7/1	1	100.00
St. Alexis Hospital ★	Cleveland	E. A. Mastics	5,302	2,359	68	20	6	7/1	1	75.00
St. John's Hospital ★[4]	Cleveland	J. R. Ripton	1,839	.....	19	10	4	7/1	4	100.00
St. Luke's Hospital ★	Cleveland	D. M. Glover	2,524	3,929	79	42	4	6/25	4	60.00
St. Vincent Charity Hospital ★	Cleveland	E. P. Neary	2,804	6,446	69	13	7	....	1+	75.00
University Hospitals ★[4]	Cleveland	C. H. Lenhart	3,646	8,500	94	51	19	7/1	1	25.00
Mount Carmel Hospital ★	Columbus, Ohio	W. H. Teachnor	1,731	.....	51	19	1	1/1	3	135.00
St. Francis Hospital ★	Columbus, Ohio	I. B. Harris	1,561	.....	70	30	3	....	1	.....
Starling-Loving University Hospital ★[4]	Columbus, Ohio	V. A. Dodd	1,638	4,039	106	66	14	7/1	1-3	50.00
Miami Valley Hospital ★	Dayton, Ohio	R. K. Finley	3,035	1,004	90	26	3	7/1	1-3	75.00
Huron Road Hospital ★[4]	East Cleveland, Ohio	A. E. Biddinger	2,714	386	71	26	5	....	1-5	80.00
Mercy Hospital ★[4]	Hamilton, Ohio	G. Riggs	531	.....	..	..	1	7/1	1-3	100.00
Lakewood Hospital ★[4]	Lakewood, Ohio	N. W. Thiessen	979	102	23	5	3	7/1	1-3	100.00
Maumee Valley Hospital ★	Toledo, Ohio	E. J. McCormick	1,192	3,872	116	34	2	7/1	1	150.00
Mercy Hospital ★	Toledo, Ohio	T. F. Heatley	4,646	.....	72	26	1	....	1	.....
St. Vincent's Hospital ★[4]	Toledo, Ohio	F. M. Douglass	4,605	3,541	112	24	2	....	1	.....
St. Elizabeth's Hospital ★[4]	Youngstown, Ohio	J. M. Ranz	1,528	239	21	5	1	7/1	1	125.00
Youngstown Hospital ★	Youngstown, Ohio		4,118	331	93	25	3	7/1	1-3	100.00
St. Anthony Hospital ★	Oklahoma City	R. M. Howard	5,586	.....	213	39	3	7/1	1	75.00
University Hospitals ★	Oklahoma City	C. E. Clymer	819	4,080	43	18	3	7/1	1-3	35.00
Emanuel Hospital ★	Portland, Ore.	O. M. Nisbet	1,251	.....	9	6	2	1/1, 7/1	1+	75.00
Good Samaritan Hospital ★	Portland, Ore.	M. McKirdie	2,287	.....	24	9	1	7/1	..	75.00
Providence Hospital ★	Portland, Ore.	L. P. Gambee	754	.....	7	1	1	7/1	1-2	50.00
University of Oregon Medical School Hospitals and Clinics ★[4]	Portland, Ore.	T. M. Joyce	1,168	5,413	68	44	4	7/1	3	75.00
Abington Memorial Hospital ★	Abington, Pa.	D. Pfeiffer	2,440	2,355	78	35	3	7/1	1	50.00
Allentown Hospital ★[4]	Allentown, Pa.		3,816	3,738	106	28	2	7/1	2	75.00
Sacred Heart Hospital ★	Allentown, Pa.	W. A. Hausman Jr.	3,518	9,156	100	24	2	7/1	1-3	200.00
St. Luke's Hospital ★[4]	Bethlehem, Pa.	W. L. Estes Jr.	2,425	169	110	42	3	Quarterly	1-2	100.00
Bradford Hospital	Bradford, Pa.	C. H. Smith	1,262	.....	18	..	2	1/1, 7/1	1-3	100.00
Bryn Mawr Hospital ★	Bryn Mawr, Pa.		457	1,148	27	7	2	....	1	125.00
George F. Geisinger Memorial Hospital ★[4]	Danville, Pa.	H. L. Foss	1,870	15,316	32	16	3	7/1	1-2	75.00
Conemaugh Valley Memorial Hospital ★[4]	Johnstown, Pa.		.....	.....	..	..	2	7/1	1	100.00
St. Joseph's Hospital ★	Lancaster, Pa.	J. L. Atlee Jr.	1,649	4,501	59	32	3	7/1	3	150.00
Episcopal Hospital ★[4]	Philadelphia	I. M. Boykin and E. T. Crossan	2,734	12,585	102	..	2	....	1	50.00
Germantown Dispensary and Hospital ★	Philadelphia	W. B. Swartley	2,166	16,956	101	23	2	7/1	1-2	60.00
Graduate Hospital of the Univ. of Penn. ★	Philadelphia	W. Bates	930	10,699	51	18	3	7/1	1-3	.....
Hahnemann Hospital ★[4]	Philadelphia	W. L. Martin	4,300	16,177	181	62	2	....	2-3	.....
Hospital of the Univ. of Pennsylvania ★[4]	Philadelphia	I. S. Ravdin	3,918	33,519	64	41	10	4/1	1-5	100.00
Hospital of the Woman's Medical College of Pennsylvania ★[4]	Philadelphia	L. K. Ferguson	692	3,310	20	9	1	7/1	1-2	50.00
Jefferson Medical College Hospital ★	Philadelphia	T. H. Shallow and G. P. Muller	3,832	14,471	165	65	10	....	1	.....

Numerical and other references will be found on page 1375.

25. SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated[6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies[8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Jewish Hospital ★[4]	Philadelphia		3,718	.....	124	52	2	7/1	1-2	50.00
Lankenau Hospital ★	Philadelphia	G. C. Engel	1,525	7,296	37	20	2	7/1	1-3	100.00
Mount Sinai Hospital ★[1]	Philadelphia	M. Behrend and B. Lipshutz	1,409	7,355	41	23	2	6/1	1-3	50.00
Pennsylvania Hospital ★	Philadelphia	H. P. Brown and J. H. Gibbon	1,951	11,253	98	32	6	....	1	.....
Philadelphia General Hospital ★[4]	Philadelphia		3,418	.....	240	..	4	....	1-3	70.00
Presbyterian Hospital ★[1]	Philadelphia	W. L. Carlss	2,138	6,120	..	..	2	....	1-3	50.00
Temple University Hospital ★[4]	Philadelphia	W. E. Burnett	1,098	26,438	77	30	6	7/1	3	50.00
Woman's Hospital ★[1]	Philadelphia	C. M. Smyth Jr.	761	.....	..	..	1	7/1	3	100.00
Allegheny General Hospital ★	Pittsburgh	J. C. Burt	2,617	4,425	71	15	1	7/1	1	100.00
Children's Hospital [4]	Pittsburgh	W. O. Sherman and E. W. Meredith	862	2,190	18	7	1	7/1	1-3	75.00
Mercy Hospital ★[4]	Pittsburgh	H. H. Donaldson	4,419	5,401	62	18	3	9/1	1-3	.....
Montefiore Hospital ★	Pittsburgh	H. Frankenstein	1,270	2,016	29	7	3	7/1	3	50.00
Presbyterian Hospital ★[1]	Pittsburgh	E. W. Meredith	1,300	.....	31	16	6	....	1-5	33.00
St. Francis Hospital ★[4]	Pittsburgh		2,630	257	60	18	3	....	3	100.00
Reading Hospital ★[1]	Reading, Pa.	W. A. Lebkicher	1,631	5,050	49	25	1	7/1	1	125.00
St. Joseph's Hospital ★	Reading, Pa.	M. Gerhart	1,223	.....	35	16	1	7/1	1	.....
Robert Packer Hospital ★	Sayre, Pa.	D. Guthrie	1,020	.....	39	21	3	7/1	2	150.00
Mercy Hospital ★	Wilkes-Barre, Pa.		1,090	812	11	3	3	7/1	1	150.00
Wilkes-Barre General Hospital ★	Wilkes-Barre, Pa.	S. P. Mengel	2,725	1,595	77	3	2	....	1	100.00
York Hospital ★	York, Pa.	J. F. Bacon	1,565	1,151	38	9	1	7/1	1	200.00
Rhode Island Hospital ★	Providence, R. I.	E. M. Porter	3,522	5,192	238	93	4	1/1	3	50.00
Roper Hospital ★	Charleston, S. C.	F. E. Kredel	2,360	4,069	63	25	7	7/1	1-4	25.00
Baroness Erlanger Hospital ★	Chattanooga, Tenn.	W. J. Sheridan	3,617	2,078	100	24	7	7/1	1	75.00
Knoxville General Hospital ★[4]	Knoxville, Tenn.	C. Smeltzer	1,730	1,868	87	23	2	7/1	1	75.00
John Gaston Hospital ★	Memphis, Tenn.	J. L. McGehee	2,174	10,898	104	47	5	7/1	1	32.50
Methodist Hospital ★[4]	Memphis, Tenn.		2,108	.....	40	9	2	....	1	.....
St. Joseph Hospital ★	Memphis, Tenn.	A. R. Porter Jr.	1,666	.....	28	7	1	7/1	1-2	100.00
George W. Hubbard Hospital of Meharry Medical College ★	Nashville, Tenn.	M. Walker	679	3,389	57	17	5	7/1	1-3	75.00
Nashville General Hospital ★	Nashville, Tenn.	M. M. Simmons	1,603	21,156	82	17	4	7/1	1	.....
St. Thomas Hospital ★	Nashville, Tenn.	L. W. Edwards	2,487	.....	26	11	7	7/1	1-3	75.00
Vanderbilt University Hospital ★[4]	Nashville, Tenn.	B. Brooks	2,924	14,210	77	41	9	7/1	1	.....
Baylor University Hospital ★[4]	Dallas, Texas	H. W. Cochran	2,088	.....	62	21	3	7/1	1-3	50.00
Parkland Hospital ★[4]	Dallas, Texas	L. Hudson	.....	.....	..	..	4	....	1	50.00
St. Paul's Hospital ★	Dallas, Texas	O. W. Gibbons	2,943	.....	47	14	4	7/1	1-2	50.00
John Sealy Hospital ★[4]	Galveston, Texas	A. O. Singleton	1,190	4,937	51	31	10	....	1	50.00
Hermann Hospital ★[4]	Houston, Texas	H. F. Poyner	1,772	3,594	32	18	2	7/1	1-3	50.00
Jefferson Davis Hospital ★[4]	Houston, Texas	J. H. Wootters	.....	.....	..	..	3	7/1	1-3	50.00
Memorial Hospital	Houston, Texas		5,428	.....	58	11	6	....	1	.....
[illegible]ethodist Hospital ★	Houston, Texas		1,001	12	12	5	2	7/1	1-3	75.00
[illegible] Joseph's Infirmary [4]	Houston, Texas	G. W. Waldron	8,335	16,078	306	120	3	....	1	.....
Southern Pacific Hospital	Houston, Texas	J. R. Gandy	576	5,293	1	..	2	....	1-2	125.00
[illegible] and White Hospital ★[1]	Temple, Texas	G. V. Brindley	3,241	.....	40	19	12	....	2-3	150.00
Dr. W. H. Groves Latter-Day Saints Hospital ★[4]	Salt Lake City	A. M. Okelberry	2,891	.....	34	29	3	7/1	1-3	100.00
St. Mark's Hospital ★[4]	Salt Lake City		1,176	.....	18	7	2	7/1	1-2	25.00
Salt Lake County General Hospital ★	Salt Lake City	P. B. Price	919	1,853	67	38	2	7/1	1	25.00
Bishop DeGoesbriand Hospital ★	Burlington, Vt.	A. G. Mackay and A. Gladstone	978	261	9	5	1	....	1	.....
Mary Fletcher Hospital ★	Burlington, Vt.	A. G. Mackay	1,329	1,390	31	21	2	7/1	3	.....
Alexandria Hospital ★	Alexandria, Va.	G. L. Fifer	907	.....	21	8	2	7/1	1-2	125.00
University of Virginia Hospital ★[4]	Charlottesville, Va.	E. P. Lehman	2,346	9,298	75	36	6	7/1	1-5	75.00
Chesapeake and Ohio Hospital ★	Clifton Forge, Va.	J. M. Emmett	2,963	4,661	28	8	3	7/1	1-2	60.00
De Paul Hospital ★	Norfolk, Va.	O. C. Smith	1,252	253	30	18	1	....	1	.....
Norfolk General Hospital ★	Norfolk, Va.	L. Gwathmey	4,734	651	89	39	4	7/1	1-3	75.00
Johnston-Willis Hospital ★	Richmond, Va.	F. S. Johns	3,451	.....	24	10	3	7/1	1	100.00
Medical College of Virginia, Hosp. Div. ★	Richmond, Va.	I. A. Bigger	2,628	4,203	78	25	9	7/1	1	46.50
Jefferson Hospital ★	Roanoke, Va.	H. H. Trout Sr.	2,207	3,920	58	12	4	7/1	1-2	150.00
Doctors Hospital ★	Seattle	D. V. Trueblood	819	.....	17	7	1	7/1	1	150.00
King County Hospital ★	Seattle	B. P. Mullen	1,881	1,348	72	30	5	7/1	1	125.00
Providence Hospital ★	Seattle	R. L. Zech	4,638	51	8	..	2	7/1	1	100.00
Swedish Hospital ★	Seattle		1,587	.....	10	7	1	....	1	.....
Virginia Mason Hospital ★	Seattle	J. W. Baker	1,060	.....	18	13	6	....	1	75.00
Northern Permanente Foundation ★	Vancouver, Wash.	E. D. Wiley	1,710[b]	5,153[b]	..	..	2	....	1	.....
Beckley Hospital	Beckley, W. Va.	J. W. Bolen	2,193	11,554	25	8	2	1/1, 7/1	1-3	150.00
Charleston General Hospital ★[4]	Charleston, W. Va.	J. E. Cannaday	2,536	2,176	34	17	4	7/1	1-3	125.00
Chesapeake and Ohio Hospital ★	Huntington, W. Va.	R. J. Wilkinson	1,580	7,847	25	10	2	7/1	1-3	65.00
St. Mary's Hospital ★	Huntington, W. Va.	J. H. Steenbergen	2,142	.....	66	16	1	7/1	1	100.00
Laird Memorial Hospital	Montgomery, W. Va.	W. R. Laird	2,454	5,973	43	14	2	7/1	2-3	150.00
St. Joseph Hospital ★	Parkersburg, W. Va.	T. L. Harris	679	.....	9	9	1	1/1	2	.....
La Crosse Lutheran Hospital ★[4]	La Crosse, Wis.	S. B. Gundersen	1,895	384	21	13	1	7/1	1	100.00
State of Wisconsin General Hospital ★[1]	Madison, Wis.	E. R. Schmidt	1,835	3,336	95	68	9	7/1	3	25.00
Columbia Hospital ★	Milwaukee	F. Raine	2,495	.....	24	15	1	7/1	3	50.00
Milwaukee Children's Hospital [4]	Milwaukee	A. A. Schaefer	.....	.....	12	8	1	1/1	1	.....
Milwaukee County Hospital ★[4]	Milwaukee	C. F. Conroy	2,164	11,650	81	15	14	Varies	1-3	75.00
Milwaukee Hospital ★	Milwaukee	T. S. O'Malley	3,495	.....	33	14	3	....	3	70.00
Mount Sinai Hospital ★	Milwaukee	M. Bornstein	1,317	488	23	7	3	....	1	.....
St. Joseph's Hospital ★	Milwaukee	F. Stratton	5,698	.....	66	17	3	7/1	1-3	75.00
St. Luke's Hospital ★[4]	Milwaukee	H. J. Gramling	946[b]	.....	..	..	1	....	1	.....
St. Mary's Hospital ★	Milwaukee	D. Witte	.....	.....	..	..	1	....	1	.....
Gorgas Hospital ★	Ancon, C. Z.	J. R. Shaeffer	.....	.....	..	..	6	7/1	1	250.00
Queen's Hospital ★[4]	Honolulu, Hawaii		1,874	.....	34	27	3	4/1, 10/1	1-2	.....

Hospitals, 418; Assistant Residencies and Residencies, 2,078

Numerical and other references will be found on page 1375.

26. THORACIC SURGERY

United States Army.—Residencies available to medical officers, U. S. Army.
Fitzsimons General Hospital ★....................Denver
Walter Reed General Hospital ★....................Washington, D. C.

United States Navy.—Residencies available to medical officers, U. S. Navy.
U. S. Naval Hospital............................Corona, Calif.
U. S. Naval Hospital ★............................Great Lakes, Ill.

Name of Hospital	Location	Chief of Service	Inpatients Treated[6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies[5]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Highland-Alameda County Hospital ★	Oakland, Calif.	P. Sampson	.....	.....	..	..	1	7/1	1-3	$195.00
Olive View Sanatorium [4]	Olive View, Calif.	J. Skillen	197	.....	..	..	3	....	1	203.00
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames)	Norwich, Conn.	W. O. Kelley	(See Pulmonary Diseases)				2	Varies	1	225.00
City of Chicago Municipal Tuberculosis Hospital	Chicago	....	346	.....	..	..	2	....	1	.....
Veterans Administration Hospital	Hines, Ill.	J. Head	313	.....	21	5	2	....	1-3	300.00
Boston Sanatorium	Boston	J. Streider	.....	.....	..	..	1	Varies	1	150.00
University Hospital ★[4]	Ann Arbor, Mich.	J. Alexander	426	1,437	18	7	6	7/1	2	100.00
Herman Kiefer Hospital [4]	Detroit	E. J. O'Brien	(See Pulmonary Diseases)				3	7/1	2+	333.00
Mississippi State Tuberculosis Sanatorium [4]	Sanatorium, Miss.	L. R. Reid	100	500	1	..	1	7/1	2 3	175.00
Barnes Hospital ★	St. Louis	E. A. Graham	415	1,750	39	21	3	....	1	.....
Berthold S. Pollak Hospital for Chest Diseases	Jersey City, N. J.	B. S. Pollak	100	.....	..	..	1	....	1	.....
Kings County Hospital ★	Brooklyn	J. Pirundini and H. Maier	.....	416	35	13	2	7/1	1-2	70.00
Edward J. Meyer Memorial Hospital ★[4]	Buffalo	J. D. Stewart	32	.....	6	2	1	7/1	1-3	100.00
Herman M. Biggs Memorial Hospital [4]	Ithaca, N. Y.	R. Douglass	74	.....	..	..	2	....	1	200.00
Triboro Hospital [4]	Jamaica, N. Y.	D. A. Mulvihill and H. W. Louria	(See Pulmonary Diseases)				6	7/1	1	50.00
Mount Morris Tuberculosis Hospital	Mount Morris, N. Y.	....	44	.....	..	..	1	....	1	.....
Bellevue Hosp., Div. I—Columbia Univ. ★[4]	New York City	F. B. Berry	(See Pulmonary Diseases)				4	1/1, 7/1	1½	70.00
Metropolitan Hospital ★[4]	New York City	S. A. Thompson	18	.....	18	3	2	7/1	1	100.00
Veterans Administration Hospital	New York City	H. Conway	240	.....	..	..	4	7/1	1-4	303.33
Homer Folks Tuberculosis Hospital	Oneonta, N. Y.	A. M. Skinner	146	27	1	1	2	10/1	1	25.00
Ray Brook State Tuberculosis Hospital	Ray Brook, N. Y.	J. Gordon	138	.....	..	..	2	Varies	1-2	230.00
Sea View Hospital [4]	Staten Island, N. Y.	L. R. Davidson	243	.....	31	5	7	1/1, 7/1	2	45.00
Veterans Administration Hospital	Oteen, N. C.	J. A. Moore	.....	.....	..	..	1	....	1	.....
North Carolina Baptist Hospital ★[4]	Winston-Salem, N. C.	H. H. Bradshaw	85	156	13	12	2	....	1	.....
City Hospital ★[4]	Cleveland	C. H. Lenhart	.....	.....	..	..	1	7/1	1	75.00
University of Oregon Medical School Hospitals and Clinics ★[4]	Portland, Ore.	W. Conklin	213	5,612	12	7	3	7/1	3	75.00
Muirdale Sanatorium	Milwaukee	....	(See Pulmonary Diseases)				1	....	1	.....

Hospitals, 27; Assistant Residencies and Residencies, 66

27. UROLOGY

United States Army.—Residencies available to medical officers, U. S. Army.
†Letterman General Hospital ★....................San Francisco
Walter Reed General Hospital ★....................Washington, D. C.
†Madigan General Hospital ★........................Fort Lewis, Wash.

United States Navy.—Residencies available to medical officers, U. S. Navy.
†U. S. Naval Hospital ★............................Bethesda, Md.
†U. S. Naval Hospital ★............................St. Albans, N. Y.
†U. S. Naval Hospital ★............................Philadelphia
†U. S. Naval Hospital ★............................Portsmouth, Va.

Name of Hospital	Location	Chief of Service	Inpatients Treated[6]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies[5]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Jefferson and Hillman Hospitals ★	Birmingham, Ala.	W. F. Scott	486	4,175	22	6	2	7/1	1	$ 30.00
†California Hospital ★	Los Angeles	G. J. Thomas	674	.....	24	6	1	7/1	3	100.00
Los Angeles County Hospital ★[4]	Los Angeles	J. J. Crane	1,958	7,878	201	71	5	Varies	3	157.20
†Presbyterian Hosp., Olmsted Memorial ★	Los Angeles	....	751	.....	19	..	1	9/1	2	150.00
White Memorial Hospital ★	Los Angeles	R. W. Barnes	549	6,050	..	..	3	....	1-3	135.00
Franklin Hospital ★	San Francisco	F. Hinman	647	.....	17	3	3	7/1	1	200.00
San Francisco Hospital ★[4]	San Francisco	....	427	.....	32	6	3	7/1	1	200.00
Stanford University Hospitals ★[4]	San Francisco	J. R. Dillon	420	3,875	10	2	3	7/1	1-2	50.00
University of California Hospitals ★[4]	San Francisco	F. Hinman	335	6,602	9	4	1	7/1	1	50.00
†Veterans Administration Hospital	San Francisco	....	.....	.....	..	..	3	7/1	1-3	275.00
†Santa Clara County Hospital ★	San Jose, Calif.	D. Fagerstrom	250	480	8	6	1	7/1	1-2	185.00
†Veterans Administration Hospital	Van Nuys, Calif.	J. A. Weinberg	289	4,826	8	7	3	1/1, 7/1	1-3	275.00
†Veterans Administration Center	W. Los Angeles, Calif.	....	.....	.....	..	..	4	7/1	1-3	275.00
†Colorado General Hospital ★	Denver	J. A. Philpott	197	1,296	24	16	1	7/1	1	85.00
Grace New Haven Community Hospital New Haven Unit ★[4]	New Haven, Conn.	C. Deming	202	.....	7	..	2	7/1	3	40.00
†Waterbury Hospital ★	Waterbury, Conn.	C. H. Neuswanger	435	43	17	4	1	Varies	2	100.00
†Freedmen's Hospital ★	Washington, D. C.	R. F. Jones	250	3,460	38	7	1	7/1	1	150.00
Gallinger Municipal Hospital ★[4]	Washington, D. C.	W. P. Herbst	370	1,053	30	11	2	7/1	1-3	75.00

Numerical and other references will be found on page 1375.

27. UROLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated[a]	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies[8]	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
St. Vincent's Hospital ★	Jacksonville, Fla.	R. B. McIver	403	.....	29	15	2	7/1	1	125.00
Grady Memorial Hospital ★[15]	Atlanta, Ga.	M. K. Bailey	807	5,975	27	4	4	7/1	1	20.00
University Hospital ★	Augusta, Ga.	J. R. Rinker	331	563	25	3	1	7/1	1-2	40.00
†Alexian Brothers Hospital ★	Chicago	E. F. Hess	283	.....	26	13	1	7/1	1-3	100.00
Cook County Hospital ★	Chicago	H. Culver	1,628	2,413	251	10	2	Varies	1-3	.....
†Mercy Hospital ★	Chicago	H. E. Landes	610	1,273	10	6	2	1/1	1-3	25.00
Michael Reese Hospital ★[4]	Chicago	H. C. Rolnick	484	1,419	..	..	3	....	1-3	25.00
†Mount Sinai Hospital ★	Chicago	H. C. Rolnick	287	480	23	14	1	Varies	1-2	50.00
Presbyterian Hospital ★	Chicago	H. L. Kretschmer	967	2,907	19	13	2	1/1	1-3	25.00
St. Luke's Hospital ★	Chicago	H. Culver	596	1,551	23	12	2	7/1	1-3	25.00
University of Chicago Clinics ★	Chicago	C. B. Huggins	351	6,621	7	5	2	7/1	1-2	25.00
Wesley Memorial Hospital ★[4]	Chicago	V. J. O'Conor	695	.....	11	5	1	1/1, 7/1	1-3	25.00
†Decatur and Macon County Hospital	Decatur, Ill.	A. C. Simon	226	5,261	5	1	1	6/1	1-5	100.00
†St. Francis Hospital ★[4]	Peoria, Ill.	A. Sprenger	798	179	36	14	1	4/1	1	150.00
Indianapolis City Hospital ★	Indianapolis	R. L. Smith	380	2,369	40	15	2	....	1	.....
†Indiana University Medical Center ★	Indianapolis	H. O. Mertz	624	1,924	16	7	2	7/1	1-3	33.33
†Methodist Hospital ★	Indianapolis	P. E. McCown	1,061	.....	24	12	1	7/1	1-2	200.00
University Hospitals ★[4]	Iowa City	N. G. Alcock	1,740	1,363	83	43	8	7/1	1	40.00
†University of Kansas Hospitals ★[4]	Kansas City, Kan.	N. F. Ockerblad	355	1,055	32	9	1	....	1	.....
†St. Joseph Hospital ★	Lexington, Ky.	W. T. Briggs	475	.....	16	3	1	7/1	1-2	90.00
†Veterans Administration Hospital	Louisville, Ky.	M. I. Schwalbe	.....	.....	..	..	1	7/1	1-2	275.00
Charity Hospital of Louisiana ★	New Orleans, La.		2,335	12,516	135	37	13	7/1	1-3	25.00
Touro Infirmary ★	New Orleans, La.	W. A. Reed	720	2,552	25	9	1	7/1	1	17.50
Johns Hopkins Hospital ★	Baltimore	W. W. Scott	1,197	4,224	29	16	3	7/1	1	.....
†Sinai Hospital ★	Baltimore	A. E. Goldstein	374	888	25	18	2	7/1	1-5	25.00
U. S. Marine Hospital ★	Baltimore	T. M. Burkholder	462	1,224	18	15	1	7/1	1-4	175.00
Beth Israel Hospital ★	Boston	E. G. Crabtree	367	1,731	10	4	1	....	1	.....
Boston City Hospital ★[4]	Boston	H. H. Howard	400	8,054	40	6	2	....	1-2	50.00
Lahey Clinic	Boston	E. E. Ewert	550[b]	9,000[b]	..	..	4	....	1-3	.....
Massachusetts General Hospital ★	Boston	F. H. Colby	434	7,377	27	22	3	7/1	1-3	41.67
Massachusetts Memorial Hospitals ★	Boston	S. N. Vose	.....	1,410	10	2	3	....	1	50.00
Peter Bent Brigham Hospital ★	Boston	J. H. Harrison	350[b]	3,000[b]	..	..	2	....	1	.....
†Veterans Administration Hospital (West Roxbury)	Boston	G. Warren	122	162	2	2	2	6/1	2	275.00
†Veterans Administration Hospital	Framingham, Mass.	E. P. Stone	.....	.....	..	..	2	Varies	2	275.00
University Hospital ★[4]	Ann Arbor, Mich.	R. M. Nesbit	1,126	8,171	24	14	6	....	1	.....
City of Detroit Receiving Hospital ★[4]	Detroit	F. Cole	679	2,177	29	10	2	7/15	3	149.67
Grace Hospital ★	Detroit	L. W. Hull	952	396	24	6	2	7/1	1-3	75.00
Harper Hospital ★[4]	Detroit	F. H. Cole	.....	.....	..	..	3	....	1	113.00
Henry Ford Hospital ★[4]	Detroit	J. K. Ormond	528	12,032	15	8	2	7/1	1-3	200.00
Wayne County General Hospital and Infirmary ★[4]	Eloise, Mich.	W. L. Sherman	834	2,155	100	32	2	7/1	1	197.00
Minneapolis General Hospital ★	Minneapolis	T. H. Sweetser	262	1,430	38	14	1	1/1, 7/1	1	100.00
†St. Mary's Hospital ★	Minneapolis	T. H. Sweetser	428	.....	14	6	1	....	3	.....
University Hospitals ★[4]	Minneapolis	C. D. Creevy	486	1,896	21	13	2	7/1	1-3	100.00
Mayo Foundation	Rochester, Minn.	W. F. Braasch and S. J. Thompson	(See page 1375)				12	....	1	.....
Anker Hospital ★	St. Paul	F. E. B. Foley	312	724	28	22	1	7/1	1	91.50
Charles T. Miller Hospital ★	St. Paul	F. E. B. Foley	465	3,303	..	..	1	1/1	1-3	.....
Kansas City General Hospital No. 1 ★	Kansas City, Mo.	R. L. Hoffman	401	1,360	31	13	1	7/1	1-2	50.00
Research Hospital ★	Kansas City, Mo.	R. L. Hoffman	496	.....	5	2	1	8/1	1	.....
†Barnes Hospital ★	St. Louis	D. K. Rose	738	2,191	20	13	3	7/1	1-3	*
Homer G. Phillips Hospital ★	St. Louis	R. Deakins	597	1,873	32	8	2	7/1	1	50.00
St. Louis City Hospital ★[4]	St. Louis	G. Carroll	535	1,508	71	28	3	7/1	1	86.00
St. Mary's Group of Hospitals ★	St. Louis	C. E. Burford	600	2,488	19	14	2	Varies	3	35.00
Atlantic City Hospital ★	Atlantic City, N. J.	C. H. de T. Shivers	284	4,708	6	3	1	7/1	1	.....
Bayonne Hospital and Dispensary ★	Bayonne, N. J.	S. R. Woodruff	512	285	4	3	1	7/1	1	.....
Jersey City Hospital ★	Jersey City, N. J.	E. J. Daly	630	2,855	41	6	2	Varies	1	50.00
Newark City Hospital ★	Newark, N. J.	C. R. O'Crowley	850	.....	36	..	2	1/1	1-2	30.00
Albany Hospital ★[4]	Albany, N. Y.	J. E. Heslin	761	.....	36	21	2	7/1	1	41.67
Kings County Hospital ★	Brooklyn	F. L. Senger	1,791	2,814	164	26	2	7/1	2	70.00
Long Island College Hospital ★	Brooklyn	F. L. Senger	619	2,522	19	4	3	7/1	3	25.00
Buffalo General Hospital ★	Buffalo	O. J. Oberkircher	482	1,010	11	3	2	7/1	1-3	25.00
Edward J. Meyer Memorial Hospital ★[4]	Buffalo	E. M. Watson	414	1,755	56	16	3	7/1	3	100.00
†Millard Fillmore Hospital ★	Buffalo	E. L. Brodie	642	.....	15	5	2	....	1	.....
Queens General Hospital ★[4]	Jamaica, N. Y.	F. G. Riley	876	9,616	107	48	3	....	3	70.00
Bellevue Hospital, Div. II—Cornell Univ. ★[4]	New York City	R. S. Hotchkiss	1,167	9,315	37	13	4	7/1	3	45.00
†Beth Israel Hospital ★[4]	New York City	S. F. Wilhelm	521	1,613	19	3	3	7/1	3	50.00
Metropolitan Hospital ★[4]	New York City	S. Carleton	272	2,977	34	7	1	11/1	1	100.00
Morrisania City Hospital ★[4]	New York City	J. Duff	587	2,037	24	7	4	7/1	1	70.00
†Mount Sinai Hospital ★	New York City	L. Edelman	.....	4,797	..	..	3	1/1, 7/1	1-3	50.00
New York City Hosptial ★	New York City	J. H. Morrissey	172	2,330	26	7	2	7/1	1	120.00
New York Hospital ★[4]	New York City	O. Lowsley	365	7,434	10	..	6	....	1	.....
New York Polyclinic Medical School and Hospital ★	New York City	J. F. McCarthy	459	.....	14	5	1	7/1	3	25.00
New York Post-Graduate Medical School and Hospital ★	New York City	C. G. Bandler	429	3,818	10	1	1	7/1	2	.....

Numerical and other references will be found on page 1375.

27. UROLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated 6	Outpatient Visits	Deaths	Autopsies	Asst. Res. and Residencies 8	Beginning of Service (1947)	Length of Service (Years)	Beginning Stipend (Month)
Presbyterian Hospital *4	New York City	G. F. Cahill	1,237	8,608	38	..	6	....	3	41.66
Roosevelt Hospital *	New York City	S. A. Beisler	522	1,786	20	6	2	7/1	1-3	25.00
St. Luke's Hospital *	New York City	G. F. Hock	669	2,356	17	8	1	Varies	3	50.00
Strong Memorial-Rochester Municipal Hospitals *4	Rochester, N. Y.	W. W. Scott	689	7,871	..	..	3	7/1	1-4	41.66
Sea View Hospital 4	Staten Island, N. Y.	A. Greenberger	107	.....	4	1	2	7/1	1	45.00
Charlotte Memorial Hospital *4	Charlotte, N. C.	P. Nowlin	1,305	.....	22	9	1	7/1	1-3	75.00
Duke Hospital *4	Durham, N. C.	E. P. Alyea	563	8,590	7	6	3	7/1	1	.....
Watts Hospital *	Durham, N. C.	W. M. Coppridge	131	119	..	..	1	7/1	1-2	75.00
North Carolina Baptist Hospital *4	Winston-Salem, N. C.	F. K. Garvey	470	860	14	6	2	....	1	.....
City Hospital *4	Cleveland	H. Trattner	472	3,817	42	..	2	7/1	1-4	60.00
Cleveland Clinic Foundation Hospital	Cleveland	W. E. Lower	934	17,489	27	7	5	7/1	1-3	100.00
University Hospitals *4	Cleveland	J. J. Joelson	837	4,910	11	7	1	7/1	1	25.00
†Veterans Administration Hospital	Cleveland	A. M. Barone	.....	.....	..	..	1	Varies	1-3	275.00
Starling-Loving University Hospital *4	Columbus, Ohio	W. N. Taylor	624	690	33	23	3	7/1	1-3	50.00
St. Vincent's Hospital *4	Toledo, Ohio	L. P. Dolan	639	32	24	4	1	....	1	.....
†University Hospitals *	Oklahoma City	B. A. Hayes	212	1,973	24	9	1	7/1	1-2	25.00
University of Oregon Medical School Hospitals and Clinics *4	Portland, Ore.	J. R. Hand	256	1,717	24	12	3	7/1	3	75.00
†Veterans Administration Hospital	Portland, Ore.	P. B. Potampa	283	910	13	6	1	10/1	3	275.00
†Allentown Hospital *	Allentown, Pa.	W. C. Masonheimer	662	326	13	3	1	....	2	75.00
†Veterans Administration Hospital	Aspinwall, Pa.	C. A. Kuehn	225	.....	8	2	1	1/1, 7/1	3	.....
St. Vincent's Hospital *	Erie, Pa.	E. Hess	1,170	3,540	25	7	1	6/1	1	50.00
George F. Geisinger Memorial Hospital *	Danville, Pa.	W. I. Buchert	625	6,067	17	12	1	7/1	1	75.00
†Harrisburg Hospital *	Harrisburg, Pa.	S. L. Grossman	593	3,098	47	2	1	1/1, 7/1	1-2	100.00
Graduate Hospital of the Univ. of Pa. *	Philadelphia	J. C. Bridsall	102	2,052	5	1	1	7/1	1-2	.....
†Hahnemann Hospital *	Philadelphia	E. W. Campbell	550	6,601	6	3	1	7/1	2-3	50.00
Hospital of the Univ. of Pennsylvania *	Philadelphia	P. B. Hughes	714	2,308	12	8	2	Varies	2-3	100.00
Jefferson Medical College Hospital *	Philadelphia	D. M. Davis	861	5,062	24	12	3	....	1	.....
†Lankenau Hospital *	Philadelphia	C. A. W. Uhle	175	618	6	6	1	7/1	1-2	100.00
†Mount Sinai Hospital *4	Philadelphia	M. Muschat	282b	237b	..	..	1	....	1	.....
Pennsylvania Hospital *	Philadelphia	L. Herman	698	2,237	21	8	2	7/1	1-3	20.00
Presbyterian Hospital *4,10	Philadelphia	J. C. Bridsall	329	5,311	..	..	1	....	1-3	50.00
†Temple University Hospital *4	Philadelphia	L. E. McCrae	217	2,163	11	4	1	7/1	3	50.00
Mercy Hospital *4	Pittsburgh	E. G. McCague	509	658	10	6	1	....	1	.....
†University of Pittsburgh Medical Center *	Pittsburgh	J. J. Lee	851	1,150	16	5	3	7/1	1-3	.....
†Roper Hospital *	Charleston, S. C.	J. J. Ravenel	470	822	17	8	3	....	1	.....
†Veterans Administration Center	Columbia, S. C.	H. Wyman	.....	.....	..	..	4	Varies	1-4	.....
†John Gaston Hospital *	Memphis, Tenn.	T. D. Moore	623	8,004	27	13	4	1/1, 6/1	3	.....
†Veterans Administration Hospital	Memphis, Tenn.	F. M. Jacobs	.....	....	..	..	3	Varies	1-5	.....
†Veterans Administration Hospital	Nashville, Tenn.	H. S. Shelley	.....	.....	..	..	1	7/1	1-3	275.00
Parkland Hospital *	Dallas, Texas	A. I. Folsom	.....	.....	..	..	2	....	1	50.00
John Sealy Hospital *	Galveston, Texas	R. E. Cone	7,195	72,350	17	7	1	3/1	3	50.00
†Hermann Hospital *	Houston, Texas	C. M. Crigler and G. H. Orr	657	1,021	21	10	2	7/1	3-4	50.00
†Mary Fletcher Hospital *23	Burlington, Vt.	W. M. Flagg	355	114	21	6	1	7/1	3	.....
University of Virginia Hospital *	Charlottesville, Va.	S. A. Vest	615	3,718	22	3	4	7/1	1-4	60.00
†Medical College of Virginia, Hosp. Div. *	Richmond, Va.	A. I. Dodson	594	2,495	22	8	3	7/1	1	46.50
†Veterans Administration Hospital	Richmond, Va.	R. C. Bunts	.....	.....	..	..	3	1/1, 7/1	3	275.00
†La Crosse Lutheran Hospital *	La Crosse, Wis.	A. H. Gundersen	231	4	6	2	1	7/1	1	.....
State of Wisconsin General Hospital *	Madison, Wis.	I. R. Sisk	576	.....	27	18	4	7/1	3	25.00
Milwaukee County Hospital *4	Milwaukee	R. E. Stockinger	429	1,529	33	..	1	Varies	1-3	75.00
†Veterans Administration Hospital	Milwaukee	J. C. Sargent	189	2,400	10	6	4	Varies	4	275.00

Hospitals, 140: Assistant Residencies and Residencies, 317

Mayo Foundation Fellowships—The Mayo Foundation for Medical Education and Research, Rochester, Minn.; three-year fellowships, beginning quarterly, leading to the degree of M.S or Ph.D. with field named from the University of Minnesota; in Anesthesia, Dermatology and Syphilology, Internal Medicine, Neurology and Psychiatry, Neurological Surgery, Obstetrics and Gynecology, Ophthalmology, Orthopedic Surgery, Otolaryngology, Pathology, Pediatrics, Physical Medicine, Plastic Surgery, Proctology, Radiology, Surgery, Urology; stipend $1,110 per year, (clinical fellowships including pathology and radiology—tentative estimate, 400). Address applications to The Mayo Foundation, Rochester, Minn.

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a. Compensation arranged by medical school and hospital.
b. As reported in previous list.
c. In lieu of maintenance.
d. Residency in epilepsy.
e. Obstetrical training at Herman Kiefer Hospital, Detroit.
f. Training in gynecology at City of Detroit Receiving Hospital.
g. Assignment in psychosomatic medicine also available.
h. Fellowship offered in affiliation with Northwestern University Medical School, St. Luke's Hospital and Wesley Memorial Hospital, Chicago.
j. Outpatient and home delivery service only.
k. Training in gynecology at Barnes Hospital, St. Louis.
m. In affiliation with Cincinnati General Hospital.
½. Approved by the Board as offering satisfactory six months training.
1. Approved by the Board as offering satisfactory one year training.
1½. Approved by the Board as offering satisfactory eighteen months training.
2. Approved by the Board as offering satisfactory two year training.
2½. Approved by the Board as offering satisfactory thirty months training.
3. Approved by the Board as offering satisfactory three year training.
4. Residencies open to women.
5. Clinical data includes psychiatry.
6. Inpatients: Data refers to total inpatients treated in specialty. Obstetrical admissions do not include newborn. In anesthesiology, general residency and pathology total hospital admissions are used.
7. Clinical data includes neurology.
8. Includes fellowships.
9. Affiliated with Northwest Clinic, Minot.
10. Includes acceptable affiliate assignment at Urologic Clinic, Philadelphia.
11. Includes affiliate service at South Bend Medical Laboratory, St. Joseph Hospital, South Bend; Elkhart General Hospital, Elkhart and St. Joseph's Hospital, Mishawaka, Indiana.
12. Represents training acceptable to Board in (1) radiology, (2) roentgenology, (3) therapeutic radiology, (4) diagnostic roentgenology.
13. Affiliated with North Carolina Orthopedic Hospital, Gastonia.
14. Type of training acceptable to Board: A—adult orthopedics; C—children's orthopedics; F—fractures; S—basic sciences.
15. Includes affiliate service at Emory University.
16. Includes assignment at Pima County General Hospital, Tucson.
17. Acceptable affiliations at Norton Memorial Infirmary and Veterans Administration Hospital, Louisville.
18. Included in the affiliated program of the University of Colorado Medical School.
19. Training will also be carried out at DeKalb Public Hospital and St. Mary's Hospital, DeKalb, Ill.
20. Part of three year program offered by Harper, City of Detroit Receiving and Children's Hospitals in affiliation with Wayne University.
21. In affiliation with Johns Hopkins Hospital, Baltimore.
22. Approved for training in syphilology only.
23. Affiliated with Medical School of the University of Vermont, to include assignment at Bishop De Goesbriand Hospital.
24. Affiliated with Free Hospital for Women, Brookline, Mass.
25. In affiliation with Hartford Hospital, Hartford, Conn.
26. In affiliation with Good Samaritan and St. Vincent's Hospitals, Portland.
† Indicates temporary approval.

APPROVED MEDICAL SCHOOLS

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 assumed title to Jefferson Hospital and Hillman Hospital, Birmingham. The Medical College of Alabama cares for all indigent patients of the county and city, maintenance of which is paid to the university on a per diem basis by the county. In 1943 appropriation included one million dollars for the building of a new medical school which will be erected as early as possible, and temporary quarters are now in the Jefferson-Hillman Hospital. First instruction in the Medical College of Alabama started June 4, 1945, with a junior class and this class was graduated in October, 1946. On October 8, 1945, the School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty, was absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. The accelerated program started June 8, 1942, and discontinued in 1945 with the first freshman class. Tuition is as follows: for legal residents of Alabama $400 per academic year plus incidental fees of $20. Nonresidents of the state are charged an additional $100 each session. The registration for the 1946-1947 session was 157; graduates 21. The last class began for freshmen and sophomores Oct. 7, 1946, and ended June 10, 1947; for juniors Feb. 25, 1946 and ended in October, 1946. The last senior class began Oct. 21, 1946, and ended June 10, 1947. The next freshman session will start Oct. 6, 1947 and will end June 12, 1948. The Dean is Roy R. Kracke, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. At the present time entrance requirements are two years of collegiate work, but three years will be required beginning September, 1948. The B.S. degree is conferred at the end of the second year. An accelerated program, adopted July 1, 1943, involving the admittance and graduation of a class approximately every nine months, was discontinued July 1, 1946. The fees for the four years for residents of Arkansas are $280 a year; nonresidents are charged $225 additional each year. The registration for the 1946-1947 session was 248; graduates 47. The last session began September 30, 1946, and ended June 23, 1947. The next session will begin September 29, 1947, and will end June 21, 1948. The Dean is Benjamin B. Wells, M.D.

CALIFORNIA

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Medical Center, San Francisco 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of sixteen weeks each. The fees average $315 per academic year. Nonresidents are charged $250 additional each year. An accelerated program was adopted June 15, 1942 and discontinued in July 1946. The registration for the 1946-1947 session was 284; graduates 68. The last session began Sept. 19, 1946 and ended June 21, 1947. The next class will begin Sept. 18, 1947 and will end June 19, 1948. The Dean is Francis Scott Smyth, M.D., San Francisco.

Loma Linda-Los Angeles

College of Medical Evangelists, Loma Linda; Boyle and Michigan Avenues, Los Angeles 33.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The freshman, sophomore and junior years consist of a nine month academic session and the senior year will have in addition to the nine month session a six weeks' clinical clerkship during the summer between the junior and senior years. A twelve month internship in an approved hospital is required. An accelerated program was adopted July 1, 1942 and discontinued June 30, 1946. The yearly tuitions including fees are respectively, $705, $694, $712, and $720. The registration for 1946-1947 was 324; graduates 90. The last session the freshman, sophomore and junior students began on September 22, 1946 and ended June 30, June 30, and June 20, 1947 respectively. The senior session began July 1, 1946 and was completed June 22, 1947. The next session will begin September 21, 1947 and will end on June 30, 1948 for the freshmen, June 20, 1948 for the sophomores, June 11 and 13 respectively for the juniors and seniors. The president is Walter E. Macpherson, M.D., Los Angeles. The deans are Harold Shryock, M.D., Loma Linda, and W. F. Norwood, Ph.D., Los Angeles.

Los Angeles

University of Southern California School of Medicine, 3551 University Avenue, Zone 7.—Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are approximately 90 semester hours. An internship is required for graduation. Coeducational since organization. Annual fees amount to approximately $600. An accelerated program was adopted June 15, 1942 and discontinued September 16, 1946. The registration for 1946-1947 was 256; graduates 66. The last session began September 16, 1946 and ended June 14, 1947. The next session will begin September 15, 1947 and will end June 12, 1948. The Dean is Burrell O. Raulston, M.D.

Stanford University-San Francisco

Stanford University School of Medicine, University Campus, Stanford University; 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry, and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. An accelerated program was adopted June 7, 1942 and discontinued June 29, 1946. The average fee for each of the four years is $600. The registration for 1946-1947 was 240; graduates 60. The last session for all classes began Sept. 23, 1946 and ended June 11, 1947. The next session will begin Sept. 29, 1947 and will end June 9, 1948. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The accelerated program was adopted June 15, 1942 and discontinued September 1946. The entrance requirements are three years of collegiate work. The fees average $283 per academic year. Nonresidents are charged $225 additional each year. The registration for 1946-1947 was 241; graduates 55. The last session began September 30, 1946 and ended June 9, 1947. The next session will begin October 6, 1947 and will end June 14, 1948. The Dean is Ward Darley, M.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The requirements for admission are three years collegiate work. An accelerated program was adopted June 29, 1942 and discontinued March 28, 1946. The fees average $756 per academic year. The registration for 1946-1947 was 226; graduates 63. The last session for freshmen and sophomores began Sept. 16, 1946 and ended June 11, 1947; the last session for juniors and seniors began Mar. 28, 1946 and ended June 11, 1947. The next session will commence Sept. 22, 1947 and will end June 18, 1948. The Dean is C. N. H. Long, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, N. W., Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of non-veterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $635 per academic year. Registration for 1946-1947 was 366, graduates 89. An accelerated program was adopted June 29, 1942 and discontinued March 17, 1946. The last session for freshmen began Sept. 16, 1946 and ended May 29, 1947; the sophomore class began Sept. 16, 1946 and ended May 26, 1947; the junior class began Sept. 16, 1946 and ended June 11, 1947 and the senior class began Sept. 16, 1946 and ended June 9, 1947. The next session will begin Sept. 22, 1947 and will end May 29, 1948. The Dean is Rev. Paul A. McNally, S.J., Ph.D.

George Washington University School of Medicine, 1335 H Street, N. W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the Institution. Coeducational since 1884. Sixty semester hours of college work were required for admission for the 1946-1947 and ninety hours will be required for the session beginning September 1947. The fees average $600 per academic year. An accelerated program was adopted June 8, 1942 and discontinued March 9, 1946. The registration for 1946-1947 was 310; graduates 79. The last session for freshmen, sophomores, and juniors began Sept. 30, 1946 and ended May 24, 1947; the last session for seniors began Sept. 30, 1946 and ended May 28, 1947. The next session for all classes will begin Sept. 15, 1947 and will end May 26, 1948. The Dean is Walter A. Bloedorn, M.D.

Howard University College of Medicine, Fifth and W Streets, N. W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. An accelerated program was adopted June 12, 1943 and was discontinued June 7, 1946. The fees are, respectively, $352.50; $347.50; $337.50 and $334.50. The registration for 1946-1947 was 267; graduates 62. The last session began September 28, 1946 and ended June 6, 1947. The next session will begin September 27, 1947 and will end June 4, 1948. The dean is Joseph L. Johnson, M.D.

GEORGIA

Atlanta

Emory University School of Medicine, 50 Armstrong St.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the School of Medicine of Emory University in 1915. Three years of collegiate work are required for admission. The course of study is four academic years; 32 weeks each in the 1st and 2nd years; 36 weeks in the 3rd year; 40 weeks in the 4th year. The fees for each of the four academic years are $600. An accelerated program was adopted June 15, 1942 and discontinued in March, 1947. The registration for 1946-1947 was 209; graduates, 55. The last session for freshmen and sophomores began Sept. 24, 1946 and ended June 15, 1947; the last session for juniors began Mar. 25, 1946 and ended Mar. 15, 1947; the last session for seniors began Mar. 25, 1946 and ended Feb. 28, 1947. The next session for freshman and sophomore classes will begin Sept. 18 and 22, 1947 and will end June 5, 1948; the next session for the junior class will begin Sept. 2, 1947 and will end June 5, 1948; the present session for the senior class began Aug. 1, 1947 and will end June 5, 1948. The Dean is R. Hugh Wood, M.D.

Augusta

University of Georgia School of Medicine, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of collegiate work are required for admission. An accelerated program was adopted July 1, 1942 and discontinued in April 1946. The fees average $225 per academic year for residents of Georgia, non-residents $525. Only bona fide residents of Georgia admitted (with exception of A. S. T. and V-12 Program students during World War II). The registration for the 1946-1947 session was 283; graduates 66. The 1946-1947 session for the junior and senior classes began April 11, 1946, and ended March 24, 1947; the freshman and sophomore classes began September 9, 1946, and ended June 19, 1947. The present session for the senior class began April 3, 1947, and will end March 22, 1948; the freshman, sophomore and junior classes will begin September 11, 1947, and will end June 19, 1948. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

Loyola University School of Medicine, 706 South Wolcott Avenue—Organized in 1915 by acquisition of Bennett Medical College which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery, faculties in basic sciences put on full time basis and present title assumed in 1917. Operated as an organic part of Loyola University. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The fees for the academic year beginning September 22, 1947 will be $600.00. An accelerated program was adopted July 6, 1942 and discontinued October 1, 1945. The registration for 1946-1947 was 286, graduates 76. The last session for freshmen and sophomores began Sept. 30, 1946 and ended June 28, 1947; juniors began April 29, 1946 and ended March 29, 1947; the session for seniors began April 29, 1946 and ended February 8, 1947. The present session for seniors began April 8, 1947 and will end March 23, 1948. The next session for freshmen, sophomores and juniors will begin September 22, 1947 and will end June 26, 1948. The Dean is James J. Smith, M.D.

Northwestern University Medical School, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is 85 semester hours of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. A hospital internship is required for graduation. An accelerated program was adopted June 17, 1942 and discontinued July 1, 1946. The total fees are $500 each year. The registration for 1946-1947 was 517; graduates, 156. The last session began for freshmen and sophomores September 27, 1946 and ended June 14, 1947. Juniors and seniors began March 27, 1946 and ended in March 1947. The next session will begin Sept. 26, 1947 and will end June 12, 1948. The Dean is J. Roscoe Miller, M.D.

University of Chicago, The School of Medicine, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time, candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. The requirements for admission are 90 semester hours of collegiate work. The B.S. degree may be obtained during the second year. The curriculum covers twelve quarters of work. Sixty-five students are admitted to the first year class each year. The tuition fee averages $600. The registration for 1946-1947 was 230; graduates, 62. Quarters begin in March, June, September and December of each year. All correspondence relating to general policies should be addressed to A. C. Bachmeyer, M.D., Associate Dean of the Biology Division, and that pertaining to student affairs to F. J. Mullin, Ph.D., Dean of Students.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. An accelerated program was adopted June 15, 1942 and discontinued June 1946. The fees for residents of Illinois average $291 per academic year; non-residents pay an additional fee of $150. The registration for the 1946-1947 session was 635; graduates 161. The last session began Sept. 30, 1946 and ended June 20, 1947. The next session will begin Sept. 30, 1947 and will end June 19, 1948. The Dean is John B. Youmans, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington, 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The B.S. degree in anatomy and physiology is conferred. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. An accelerated program was adopted May 12, 1942 and discontinued April 23, 1946. Regular fee for two semesters of work is $221 for residents of Indiana and $426 for nonresidents. The registration for the 1946-1947 session was 396; graduates 98. The last session for sophomores, juniors and seniors began Sept. 23, 1946 and ended June 11, 1947. Freshmen began Oct. 18, 1946 and ended June 11, 1947. The next session will begin Sept. 22, 1947 and will end June 10, 1948. The Dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. An accelerated program was adopted May 11, 1942 and discontinued June 15, 1946. The tuition fee is $230 each year for residents of Iowa and $490 for nonresidents. The registration for 1946-1947 was 291; graduates 74. The last session began for juniors and seniors April 1, 1946 and ended March 15, 1947 and for freshmen and sophomores the last session began September 23, 1946 and ended June 6, 1947. The present session for seniors began on March 24, 1947 and will end on March 13, 1948. The next session for freshmen, sophomores, and juniors will begin September 22, 1947 and will end on June 5, 1948. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th Street and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. The clinical courses are given in Kansas City. At present the first year and one-half of the medical course is given on the University campus at Lawrence, Kansas. The class is transferred to the Kansas City, Kansas campus in the middle of the year where the balance of the course is given. Coeducational since 1880. The requirement for admission is three years of collegiate work. An accelerated program was adopted in June 1942 and discontinued June 21, 1946. The annual fees average $200 per year at Lawrence Division and $300 per year at Kansas City Division. The nonresident fees are $600 per year at the Kansas City Division. The registration for 1946-1947 was 287; graduates 73. The last session for junior and senior classes began March 18, 1946 and ended March 22, 1947 with a required "elective trimester" from March 24 to June 14, 1947. The freshman and sophomore classes began September 26, 1946 and ended June 14, 1947. The next session will begin September 17, 1947 and will end June 3, 1948. The Dean is Harry R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirements for admission. Preference is given applicants with a degree or three college years leading to a degree. An accelerated program was adopted July 1, 1942 and discontinued in the fall of 1947. Fees are $450 for residents of Louisville and Jefferson County and $550 for nonresidents, per school year. The registration for 1946 was 332; graduates 87. The last session began on April 1, 1946 and ended December 21, 1946. The present session began on Jan. 6, 1947 and will end on September 20, 1947. The subsequent session will begin on Sept. 29, 1947, and will end on June 15, 1948. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 13.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931, with students of first and third year. Course covers four sessions of not less than 32 weeks each. A minimum of three years collegiate work is required for admission. An accelerated program was adopted June 25, 1942 and discontinued May 25, 1946. Total fees, $123 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1946-1947 was 313; graduates 75. The last session began June 10, 1946 for junior and senior students and ended March 8, 1947. Freshman and sophomore classes began Sept. 9, 1946 and ended May 31, 1947. The present session began on April 9, 1947 for senior classes and will end May 22, 1948. Freshman, sophomore and junior classes will begin Sept. 4, 1947 and will end June 5, 1948. The Dean is Vernon W. Lippard, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. An accelerated program was adopted July. 1, 1943 and discontinued June 1, 1946. Total fees average $550 per academic year. The registration for the 1946-1947 session was 466; graduates 125. The last session began on Sept. 3, 1946 and ended June 11, 1947. The next session will begin Sept. 2, 1947 and will end June 2, 1948. The Dean is Maxwell E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. An accelerated program was adopted June 1, 1942 and discontinued March 19, 1946. The fees average $617 per academic year. The registration for 1946-1947 was 299; graduates 79. The last session began on Sept. 30, 1946 and ended June 10, 1947. The next session will begin on Sept. 29, 1947 and will end June 8, 1948. The Dean is Alan M. Chesney, M.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, Lombard and Greene Streets, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work is required for admission. An accelerated program was adopted June 25, 1942 and discontinued March 22, 1946. The tuition fees average $513.00 for residents of the state; for nonresidents $150 additional. The registration for 1946-1947 was 334; graduates 97. The last session began September 5, 1946 and ended June 7, 1947. The next session will begin September 18, 1947, and will end June 5, 1948. The Acting Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. An accelerated program was adopted June 30, 1942 and discontinued in March 1946. Total fees average $575 per year. The registration for 1946-1947 was 244; graduates 57. The last session for freshmen, sophomores and juniors began Sept. 19, 1946 and ended June 7, 1947. The last senior class began June 3, 1946 and ended May 26, 1947. The present senior class began June 16, 1947 and will end June 7, 1948. All other classes will be enrolled Sept. 15, 1947 and the session will end June 5, 1948. The Dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. Two years of collegiate work are required for admission. An accelerated program was adopted July 1, 1942 and discontinued in June 1947. The fees average $610. The registration for 1946-1947 was 490; graduates 131. The present session began April 1, 1946 for juniors and seniors, and Sept. 23, 1946 for freshmen and sophomores and ended on June 5, 1947 for all four classes. The next academic year will begin Sept. 22, 1947 and will end June 10, 1948. The Dean is C. Sidney Burwell, M.D.

Tufts College Medical School, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission. Enrolment is generally limited to residents of the New England states. The course covers four years. An accelerated program was adopted June 15, 1942 and discontinued in March 1946. The total fees for each of the four years, respectively, are $610, $605, $605, $615. The registration for 1946-1947 was 400; graduates 103. The last session began for freshmen, sophomores and juniors Sept. 25, 1946; for seniors April 8, 1946 and all classes ended June 15, 1947. The present session began for the seniors on June 9, 1947 and for the other classes will begin Sept. 24, 1947 and ends June 20, 1948. The Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. The entrance requirements are ninety semester hours. An accelerated program was adopted June 15, 1942 and discontinued Sept. 23, 1946. The fees average $280 per academic year; for nonresidents $450 a year. The registration for 1946-1947 session was 500; graduates 140. The last session for seniors began Feb. 23, 1946 and ended Dec. 14, 1946; freshmen, sophomores and juniors began Sept. 23, 1946 and ended June 10, 1947. The next session will begin Sept. 22, 1947 and will end June 12, 1948. The Dean is Albert C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is 90 semester hours from an accredited college or university. An accelerated program was adopted June 29, 1942 and discontinued June 14, 1947. Until further notice, enrolment is limited to residents of the state of Michigan. The fees average $525 for the school year. The registration for 1946-1947 was 230; graduates 62. The last session began July 8, 1946 and ended June 14, 1947. The next session will begin Sept. 15, 1947 and will end June 12, 1948. The Dean is Hardy A. Kemp, M.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. An accelerated program was adopted June 17, 1942 and will be discontinued in the fall of 1947. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Total fees are $231 per academic year for residents and $450 for nonresidents. The registration for 1947 was 356; graduates 109. The present session began Jan. 6, 1947 and will end Sept. 12, 1947. The next session will begin Sept. 29, 1947 and will end June 12, 1948. The Dean is Harold S. Diehl, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. An accelerated program was adopted June 15, 1942 and discontinued March 16, 1946. The fees average $611 per academic year. The registration for 1946-1947 was 454; graduates 130. The last session began Sept. 17, 1946 and ended June 1, 1947. The next session will begin Sept. 16, 1947 and will end June 1, 1948. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

Washington University School of Medicine, Kingshighway and Euclid Avenue, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. An accelerated program was adopted June 15, 1942 and discontinued March 23, 1946. The fees average $601. The registration for 1946-1947 was 367; graduates 97. The last session for juniors and seniors began on April 1, 1946 and ended June 12, 1947. The session for freshmen and sophomores began Sept. 16, 1946 and ended June 12, 1947. The next session will begin on Sept. 22, 1947 and will end in June 1948. The Dean is Robert A. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 306 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. An accelerated program was adopted July 7, 1942 and discontinued March 18, 1946. The tuition fees average $574 per academic year. The registration for 1946-1947 was 234; graduates 55. The last session began Sept. 27, 1946 and ended June 5, 1947. The next session will begin Sept. 26, 1947 and will end June 3, 1948. The Dean is Charles M. Wilhelmj, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. An accelerated program was adopted June 12, 1942 and discontinued in March 1946. The fees average $320 per academic year. The registration for 1946-1947 was 314; graduates 77. The last session for juniors and seniors began April 1, 1946 and ended March 22, 1947. The last session for freshmen and sophomores began Sept. 13, 1946 and ended June 7, 1947. The present session for seniors began March 26, 1947 and will end March 20, 1948. The next session for freshmen, sophomores and juniors will begin Sept. 19, 1947 and will end June 5, 1948. The Dean is Harold C. Lueth, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. An accelerated program was adopted July 6, 1942 and discontinued in July 1946. The fees average $632 per academic year. The registration for 1946-1947 was 183; graduates 43. The last session began for freshmen Sept. 30, 1946 and ended June 21, 1947, sophomore and juniors March 25, 1946 and ended March 22, 1947 and April 5 respectively and seniors began April 1, 1946 and ended May 31, 1947. The present senior class began June 2, 1947 and will end May 31, 1948 and the juniors began April 7, 1947 and will end April 2, 1948. The next session will begin September 29, 1947 and will end June 10, 1948 for freshmen and sophomores. The Dean is R. S. Cunningham, M.D.

Brooklyn

Long Island College of Medicine, 350 Henry Street, Zone 2.—Chartered in 1930, was originally organized in 1858 as the Long Island College Hospital. From the collegiate department the first class graduated in 1860 and the last class in 1930. The first class of the Long Island College of Medicine was graduated in 1931. It is coeducational. Three years of collegiate work, including specified courses, are required for admission. An accelerated program was adopted July 6, 1942 and discontinued in March 1946. The fees are $665 per academic year. The registration for 1946-1947 was 398; graduates 95. The last session for juniors and seniors began April 1, 1946 and ended for juniors April 12, 1947, for seniors Feb. 15, 1947. The last session for freshmen and sophomores began on Sept. 23, 1946 and ended on June 14, 1947. The next session begins for freshmen, sophomores and juniors on Sept. 22, 1947 and ends June 12, 1948; for seniors Sept. 15, 1947 and will end June 10, 1948. The President and Dean is Jean A. Curran, M.D.

Buffalo

University of Buffalo School of Medicine, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is three years of collegiate work including certain prescribed science subjects. An accelerated program was adopted July 6, 1942 and discontinued in June 1946. The fees for the entire course are $2,000. The registration for 1946-1947 was 276; graduates 69. The last session began on September 30, 1946 and ended June 21, 1947. The next session will begin September 22, 1947 and will end June 19, 1948. The Dean is Stockton Kimball, M.D.

New York

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. An accelerated program was adopted July 7, 1942 and discontinued March 1946. Fees average $630 per academic year. The registration for 1946-1947 was 442; graduates 113. The last session began on March 28, 1946 for juniors and seniors and ended on June 3, 1947. The last session for freshmen and sophomores began on Sept. 12, 1946 and ended June 3, 1947. The present session began on June 9, 1947 and June 2, 1947 respectively, for the juniors and seniors and will end June 11, 1948, and will begin on Sept. 11, 1947 for the freshmen and sophomores and will end June 1, 1948. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. All students admitted are from approved colleges for premedical training. The requirement for admission is three years of college work. The fees average $725 per year. An accelerated program was adopted July 8, 1942 and discontinued in June 1946. The registration for 1946-1947 was 322; graduates 83. The last session began for juniors and seniors April 4, 1946 and ended March 28, 1947. The freshman and sophomore classes began September 26, 1946 and ended June 19, 1947. The present senior class began March 31, 1947 and will end March 26, 1948. The next session for freshmen, sophomores and juniors will begin September 24, 1947 and will end June 17, 1948. The Dean is Joseph C. Hinsey, Ph.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Three years of college work are the minimum requirements; degree preferred. An accelerated program was adopted July 1, 1942 and discontinued September 1946. The fees average $664 per academic year. The registration for 1946-1947 was 458; graduates 112. The last session began September 9, 1946 and ended June 11, 1947. The next session will begin September 15, 1947, and will end June 9, 1948. The President and Dean is J. A. W. Hetrick, M.D.

New York University College of Medicine, 477 First Avenue, Zone 16.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. Coeducational since 1919. Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences. An accelerated program was adopted June 1, 1942 and discontinued April 1, 1946. The fees average $650 per academic session. The registration for 1946-1947 was 486; graduates 120. The last session began September 23, 1946 for freshmen and sophomores and ended May 24, 1947. Juniors and seniors began April 8, 1946 and ended May 29 and June 11, 1947 respectively. The next session for all classes will begin September 22, 1947 and will end May 28, 1948. The Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 7.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission, except for veterans, who may be admitted with two years of collegiate work.

An accelerated program was adopted on July 6, 1942 and discontinued in June 1946. The fees are $600 per academic year. The registration for 1946-1947 was 269; graduates 66. The last session for juniors and seniors began March 25, 1946 and ended March 15, 1947. The session for freshmen and sophomores began September 16, 1946 and ended June 14, 1947. The present session began on March 17, 1947 for seniors and will end on March 27, 1948. The next session for freshmen, sophomores and juniors will begin on September 22, 1947 and will end on June 19, 1948. The Dean is George H. Whipple, M.D.

Syracuse

Syracuse University College of Medicine, 766 Irving Avenue, Zone 10.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. Three years of a recognized college course are required for admission. An accelerated program was adopted July 9, 1942 and discontinued July 1, 1946. The fees average $675 per academic year. The registration for 1946-1947 was 182; graduates 37. The last session began Sept. 2, 1946 and ended June 2, 1947. The next session for all classes will begin approximately Sept. 8, 1947 and will end June 14, 1948. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of two semesters in the first year and three quarters each in the sophomore, junior and senior years. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. An accelerated program was adopted July 6, 1942 and starting with the summer quarter of 1946 this accelerated schedule will be optional, the students may take the two semesters of their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the Curriculum Committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are $600 for each year of three quarters. The registration for 1946-1947 was 269; graduates 67. During 1947 the quarters begin January 6, March 31, July 7, October 6 and end March 22, June 14, September 20 and December 20. The next freshman class will be enrolled Oct. 6, 1947 and will end June 12, 1948. The Dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Ninety semester hours of college work are required for admission. An accelerated program was adopted June 29, 1942 and discontinued in June 1946. Clinical departments operate four quarters in the year, thereby making it possible for the student to complete the work for the degree of Doctor of Medicine six months short of the traditional four years. Students are encouraged during the junior and senior years to take one quarter out of each year, however, for research, for study elsewhere, or for earning money to help defray the expenses of their education. Tuition is $450 per school year. The registration for 1946-1947 was 172; graduates 38. The last session for the freshman class began September 25, 1946, sophomores September 30, 1946, juniors and seniors March 27, 1946 and ended for freshmen and sophomores June 7, 1947, for juniors March 15, 1947 and for seniors December 14, 1946. The present senior class began March 24, 1947 and will end December 13, 1947, juniors began July 7, 1947 and will end March 20, 1948. The next freshman and sophomore class will begin Sept. 29, 1947 and will end June 12, 1948. The Dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program. The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year. An accelerated program was adopted June 29, 1942, and discontinued in April 1946. Tuition is as follows: for legal residents of Cincinnati $500 a year plus breakage fees ($50 additional for those not legal residents). The registration for 1946-1947 was 329; graduates 82. The last session for freshmen and sophomores began Sept. 20, 1946, and ended May 31, 1947. The session for juniors and seniors began March 4, 1946, and ended February 1, 1947. The next session for the freshmen, sophomore and junior classes will begin Sept. 22, 1947, and will end May 29, 1948. The present session for the senior class began February 4, 1947, and will end in February of 1948. The Dean is Stanley Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The curriculum covers four scholastic years of 38 to 40 weeks each. Students are required to have three years of college work for admission. The fees average $600 per academic year. An accelerated program was adopted June 22, 1942 and discontinued March 15, 1946. The registration for 1946-1947 was 324; graduates 79. The last session began September 18, 1946 and ended June 7, 1947. The next session will begin September 17, 1947, for freshmen, sophomores and juniors and on September 1, 1947 for seniors, and the session for all classes will end June 5, 1948. The Dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues, Zone 10.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. Three years of collegiate work are required for admission. An accelerated program was adopted June 23, 1942 and discontinued in June 1946. Tuition fees average $315 (increase to $465 autumn 1947) per academic year and $150 additional for nonresidents. The registration for 1946-1947 was 323; graduates 77. The last session began on Oct. 1, 1946 and ended June 9, 1947 for freshmen and sophomores; Mar. 26, 1946 and ended Mar. 15, 1947 for juniors and seniors. The present session began on March 25, 1947 for seniors and will end March 19, 1948; the present junior class began June 17, 1947 and will end March 19, 1948, freshmen and sophomores will begin September 30, 1947 and will end June 11, 1948. The Dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 800 North East Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years—90 semester hours. An accelerated program was adopted May 10, 1943 and discontinued March 22, 1946. Fees: $50 "maintenance and incidental fee" per semester. Other annual course fees average $142, $129, $57 and $47, in the order given, beginning with the freshman year. For students not residents of Oklahoma there is a tuition charge of $350 a year, plus laboratory and course fees as indicated for the different years. The registrtaion for 1946-1947 was 275; graduates 70. The last session began September 16, 1946 and ended June 2, 1947. The next session will begin September 15, 1947 and will end June 1, 1948. The Dean is J. P. Gray, M.D.

OREGON

Portland

University of Oregon Medical School, Marquam Hill, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. An accelerated program was adopted June 22, 1942 and discontinued March 23, 1946. The total fees are, respectively, $388.50, $388.50, $383.50 and $390 for residents of Oregon and $60 a year additional for nonresidents. The registration for 1946-1947 was 277; graduates 69. The last session began October 2, 1946 and ended June 21, 1947. The subsequent session will begin September 30, 1947 and will end June 18, 1948. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2.—Organized in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869 it united with The Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Coeducational beginning with 1941-1942 session. Three years of collegiate work in an approved college of arts and sciences are required for admission. An accelerated program was adopted July 27, 1942 and discontinued March 1946. Fees are respectively $655, $650, $650, $675. The registration for 1946-1947 was 459; graduates 132. The last session began for juniors and seniors April 8, 1946 and ended April 3, 1947 The last session began for sophomores September 30, 1946 and ended June 21, 1947. The last session began for freshmen September 22, 1946 and ended June 14, 1947 The present session began for seniors April 11, 1947 and will end March 18 1948 The next session will begin for juniors September 29, 1947 and will end May 29, 1948, for sophomores Sep 22, 1947 and will end June 12, 1948 The Dean is Charles L Brown, M D

Jefferson Medical College of Philadelphia, 1025 Walnut Street—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa It was chartered with its present title in 1838 Classes have been graduated annually beginning in 1826 In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its board of trustees For the class entering in 1948 the minimum entrance requirement will be three years of college work An accelerated program was adopted June 29, 1942 and discontinued Oct 1, 1946 The tuition fee is $600 a year The registration for 1946 1947 was 606, graduates 151 The last session began for juniors and seniors on April 15, 1946 and ended May 23, 1947, sophomores began October 1, 1946 and ended June 16, 1947, freshmen began October 1, 1946 and ended June 24, 1947 The next session for all classes will begin September 11, 1947 and will end June 4, 1948 The Dean is William Harvey Perkins M D

Temple University School of Medicine, 3400 North Broad Street, Zone 40—Organized in 1901 The first class graduated in 1904 Coeducational since organization Three years of collegiate work are required for admission An accelerated program was adopted July 1, 1942 and discontinued March 21, 1946 The fees average $610 per academic year The registration for 1946 1947 was 471, graduates 114 The last session began Sept 16, 1946 and ended June 19, 1947 The next session will begin Sept. 22, 1947 and will end June 17, 1948 The Dean is William N Parkinson, M D

University of Pennsylvania School of Medicine, Thirty Sixth and Pine Streets—Organized in 1765 Classes were graduated in 1768 and in all subsequent years except 1772 and 1775 1779, inclusive The original title was the Department of Medicine, College of Philadelphia The present title was adopted in 1909 It granted the first medical diploma issued in America In 1916 it took over the Medico Chirurgical College of Philadelphia to develop it as a graduate school Coeducational since 1914 Three years of collegiate work are required for admission The accelerated program was adopted July 27, 1942 and discontinued April 1946 The tuition fee is $600, with a deposit fee of $15, a general fee including student health of $15 and a matriculation fee of $5 The registration for 1946 1947 was 494, graduates 132 The last session for juniors and seniors began April 8, 1946 and ended March 15, 1947 The last session for freshmen and sophomores began Sept 23, 1946 and ended June 7, 1947 The present session began April 7, 1947 for seniors and will end Feb 28, 1948, and will begin on Sept 22, 1947 for freshmen sophomores and juniors and will end June 5, 1948 The Dean is Isaac Starr, M D

Woman's Medical College of Pennsylvania, Henry Avenue and Abbottsford Road Philadelphia 29—Organized in 1850 Classes were graduated in 1852 and in all subsequent years except 1862 At least three years of collegiate work are required for admission and candidates with a degree are given preference The curriculum covers four years of eight and one-half months each An accelerated program was adopted July 1, 1942 and discontinued June 15, 1946 Total fees are $675 yearly The registration for 1946 1947 was 151, graduates 35 The last session began September 11, 1946 and ended June 6, 1947 The next session will begin September 8, 1947 and will end June 5, 1948 The Dean is Marion Fay, Ph D

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910 The first class graduated in 1887 Coeducation since 1899 Entrance requirements are two years of collegiate work An accelerated program was adopted July 6, 1942 and discontinued in April 1946 The total fees are $500 each year The registration for 1946 1947 was 319, graduates 83 The last session for juniors and seniors began April 8 1946 and ended March 22, 1947 The last freshman and sophomore classes began September 30, 1946 and ended June 28, 1947 The present session began on April 7, 1947 for seniors and will end March 27, 1948 and will begin on September 29, 1947 for freshmen, sophomores and juniors and will end June 26, 1948 The Dean is William S McEllroy, M D

SOUTH CAROLINA

Charleston

Medical College of the State of South Carolina, 16 Lucas Street, Zone 16—Organized 1823 as the Medical College of South Carolina The first class graduated in 1825 In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they merged in 1838 Classes were graduated in all years except 1862 to 1865 inclusive In 1913, by legislative enactment, it became a state institution Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917 An accelerated program was adopted June 25, 1942 and discontinued September 26, 1946 At least three years of collegiate work are required for admission The total fees average $425 each year for residents of South Carolina and $625 for non residents of the state The registration for 1946 1947 was 213, graduates 50 The last session began September 26, 1946 and ended June 6, 1947 The next session will begin Septmeber 25, 1947 and will end June 3, 1948 The Dean is Kenneth M Lynch M D

TENNESSEE

Memphis

University of Tennessee College of Medicine, 874 Union Avenue, Zone 3—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee This union was dissolved in 1911 The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914 Coeducational since 1911 Two years of collegiate work are required for admission The B S degree is conferred on students completing the science medical curriculum of the University The fees are $175 quarterly For residents of the state the charge is reduced $50 each quarter The registration for 1946 1947 was 512, graduates 173 During the next academic year the quarters begin September, January, March and June The Dean is O W Hyman, Ph D

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth)—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900 First class graduated in 1877. Obtained new charter independent of Walden University in 1915 Coeducational since 1876 Two years of college work in a school of liberal arts are required for admission An accelerated program was adopted June 14, 1943 and discontinued June 30, 1946 Tuition fees are, respectively, $410, $400, $390 and $400 each year The curriculum covers four academic years of thirty six weeks each In September 1942, Meharry Medical College instituted the quarter system The registration for 1946-1947 was 229, graduates 57 The last session began on Sept 30, 1946 and will end May 31, 1947 The next session begins on Sept 29, 1947 and ends June 19, 1948 The Director of Medical Education is Murray C Brown, M D, the Dean is Michael J Bent, M D

Vanderbilt University School of Medicine, Twenty First Avenue South at Edgehill, Zone 4—This school was founded in 1874 The first class graduated in 1875 Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine The course covers four academic years of nearly nine months each An accelerated program was adopted June 10, 1942 and discontinued in March 1946 The fees average $515 per academic year The registration for 1946-1947 was 193, graduates 43 The last session began Sept 23, 1946 and ended June 7, 1947 The next session will begin on Sept 22, 1947 and will end June 7, 1948 The Dean is Ernest W Goodpasture, M D

TEXAS

Dallas

Southwestern Medical College of the Southwestern Medical Foundation, 2211 Oak Lawn—Organized in 1943 The first class graduated March 20, 1944 Coeducational since organization The medical college is operated on a regular program offering three terms of twelve weeks each per academic year for the first and fourth year class For the second and third year class there is a half term of six weeks added at the end of the third term An accelerated program was adopted July 1, 1943 and discontinued Sept 30, 1946 Tuition for the academic year is $175 per term Hospitalization charges are not included in this fee Ninety semester hours are required for admission Registration for 1946 1947 was 214, graduates 86 The last session began Sept 30, 1946 and ended for freshmen June 7, 1947, for sophomores and juniors July 19, 1947 and for seniors June 3, 1947 The next session will begin Sept 1, 1947 and end June 7, 1948 The Dean is W Lee Hart, M D

Galveston

University of Texas School of Medicine, 912 Avenue B—Organized in 1891 The first class graduated in 1892 Coeducational since organization The accelerated program which was adopted on June 22, 1942 will be completed with the graduation of the senior class on Feb 13, 1948 Beginning in September 1948, all classes will be on a regular academic schedule Ninety semester hours are required for admission to the freshman class matriculating in September 1947, but students are urged to complete the Baccalaureate degree if possible prior to matriculation The fees average $109 per academic year, including health fees for medical care and hospitalization The registration for 1946 1947 was 344 Graduates on Feb 14, 1947 were 84, with six additional students being graduated through June 14, 1947 The last session began on Sept 16, 1946 for the freshman and sophomore classes and ended on June 14, 1947 The junior and senior classes for the last session began on March 4, 1946 and ended on Feb 8, 1947 The present senior class began Feb 10, 1947 and will end on Feb 13, 1948 The next freshman class will matriculate on Sept 15, 1947 and the sophomore and junior classes will matriculate on September 22 and will end June 13, 1948 The Vice President is Chauncey D Leake, Ph D, and D Bailey Calvin, Ph D, is Dean of Student and Curricular Affairs

Houston

Baylor University College of Medicine, 509 Lincoln Street.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1901. An accelerated program was adopted July 12, 1943 and discontinued in April 1946. Entrance requirements are 90 semester hours of collegiate work. The course covers four years of eight months each. The fees are, respectively, $490, $480, $468, $493. The registration for 1946-1947 was 290; graduates 71. The 1947-1948 session will begin Oct. 6, 1947 and will end June 14, 1948. The Dean is W. H. Moursund, M.D.

UTAH

Salt Lake City

University of Utah School of Medicine.—Organized in 1906. Coeducational since organization. Four-year curriculum established March, 1943. Three years of collegiate work are required for admission. The University of Utah has accepted in principle the policy of acceleration by graduating a class in three calendar years (4 academic years), but will admit only one class annually. The next Freshman class will be admitted in June, 1947. All subsequent freshman classes will begin in June of each year. Classes are scheduled during four academic quarters (11-12 wks.) each calendar year. An entering first-year student may be graduated in 12 academic quarters (3 calendar years) after date of admission; attendance during the summer quarter being required. Applications for admission (complete) must be submitted 6 months prior to opening date. The fees for each quarter are $137; there is a non-resident fee of $55 each year. The registration for 1946-1947 was 154; graduates 35. The last session began for freshmen and sophomores June 11, 1946 and ended March 18, 1947. The last session for seniors began in January 1947 and ended in August 1947. The present sophomore and junior classes began March, 1947, and will end Jan., 1948. The present senior class began January, 1947, and will end in August, 1947. The Dean is Richard H. Young, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. An accelerated program was adopted July 6, 1942 and discontinued April 15, 1947. For residents of Vermont the tuition fee averages $421 per session. Nonresidents are charged an additional $250 each session. A $25 fee is charged for the doctor's degree. Registration for 1946-1947 was 155; graduates 33. The senior class began April 9, 1946 and graduated April 15, 1947; the next senior class will begin July 3, 1947; the next freshman, sophomore and junior classes will begin Sept. 20, 1947 and all classes will end June 21, 1948. The Dean is William Eustis Brown, M.D.

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. An accelerated program was adopted June 29, 1942 and discontinued June 15, 1946. For residents of Virginia the tuition fee is $350 per academic year, for nonresidents $500. The registration for 1946-1947 was 263; graduates 67. The last session began April 5, 1946 and ended May 3, 1947. The next session will begin Sept. 15, 1947 and will end June 14, 1948. The Dean is Harvey E. Jordan, Ph.D.

Richmond

Medical College of Virginia, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. Three years of collegiate work are required for admission. The accelerated program was adopted July 5, 1942 and discontinued in 1946. Fees average $474 per academic year. Nonresidents are charged an additional $100 each year. The registration for 1946-1947 was 316; graduates 83. The last session began Sept. 24, 1946 for second, third and fourth year classes and ended June 17, 1947. The last session for the first year class began Sept. 18, 1946 and ended June 17, 1947. The subsequent session will begin Sept. 10, 1947 for the first year class and Sept. 15, 1947 for the second, third and fourth year classes and will end June 8, 1948. The Dean is Harvey B. Haag, M.D.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue, Zone 6.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. The fees average $206 per academic year. An additional fee of $200 per year is charged nonresidents. An accelerated program was adopted July 1, 1942 and discontinued July 1, 1946. The registration for 1946-1947 was 267; graduates 60. The last class for freshmen and juniors began Sept. 23, 1946, for sophomores Sept. 2, 1946 and for seniors June 24, 1946 and all classes ended May 24, 1947. The present senior class began June 9, 1947 and will end June 19, 1948. Freshmen, sophomore and junior classes will begin Sept. 29, 1947 and will end June 19, 1948. The Dean is William S. Middleton, M. D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are normally required for admission. An accelerated program was adopted July 6, 1942 and discontinued in November 1946. The fees average $600 per academic year. The registration for the 1946-1947 session was 344; graduates 90. The last session began Nov. 12, 1946 and ended July 5, 1947. The next session will begin Sept. 29, 1947 and will end May 29, 1948. The Regent is Rev. A. F. Berens, S. J.

CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete medical course since 1924. New course—three years premedical, four years medicine, one year undergraduate internship for medical degree—has been offered beginning with the session 1942-1943. Tuition for the first four years is $250 and for the fifth year $175. The registration for 1946-1947 was 155; graduates 21. The last session began Sept. 16, 1946 and ended May 10, 1947. The next regular session will begin Sept. 16, 1947 and will end May 14, 1948. The Dean is John J. Ower, M.D.

Manitoba

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include two years of collegiate work in the faculty of arts and sciences of a recognized university. An accelerated program was adopted but was discontinued with class entering in fall of 1943. The course extends over four years of eight months each and a hospital internship. The fees average $396 yearly. The registration for 1946-1947 was 256; graduates 63. The last session began Sept. 13, 1946 and ended May 15, 1947. The next session will begin on Sept. 15, 1947 and will end in May 1948. The Dean is A. T. Mathers, M.D.

Nova Scotia

Dalhousie University Faculty of Medicine, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average $331 yearly; $250 additional registration fee payable by students outside the British Empire. The registration for 1946-1947 was 189; graduates 28. The next session for all classes will begin Sept. 9, 1947 and will end May 11, 1948. The Dean is H. G. Grant, M.D.

Ontario

Queen's University Faculty of Medicine, Kingston.—Organized in 1854. First class graduated in 1855 and a class graduated each subsequent year. Fees for the first year amount to $243. The course consists of five sessions of 30 teaching weeks, and a sixth year spent in a hospital designated by the University. The degrees of M.D., C.M. are not awarded until the end of the sixth year. The accelerated program has been abandoned and the prewar time table has been resumed. Freshmen will be admitted annually. Registration for 1946-1947 was 258; graduates 41. The last session began Sept. 23, 1946 and ended May 17, 1947. The next session will begin Sept. 22, 1947 and will end May 15, 1948. The last convocation was held on June 19, 1947. As a result of the discontinuance of the accelerated medical course there will be no graduating class until June 1949. The Dean is G. Spencer Melvin, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honour college years of nine months each and four years of ten months each in the Faculty of Medicine. The total fees to residents of Canada for the last four years, respectively, are $390, $390, $390, $398; nonresidents are charged $700, $700, $700, $708 for each of the last four years. The registration for 1946-1947 was 232; graduates 34. The last session began Sept. 9, 1946 and ended June 14, 1947. The next session begins Sept. 8, 1947 and ends June 12, 1948. The Dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, Toronto 5.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The B.Sc.(Med.) degree is conferred at the end of the second or subsequent medical year. The fees are $210 for the first and second premedical years; $391 for the first second and third medical years, $419 for the fourth medical year The registration for 1946 1947 was 911, graduates 121 The last class began Sept 24, 1946 and ended May 3, 1947 The next session for first and second premedical years will begin on Sept 23, 1947 and for first, second, third and fourth medical years on Sept 28, 1947 The session for premedical years will end on May 1 and for medical years on May 29, 1948 Students will graduate annually in June The Dean is J A MacFarlane, M B

Quebec

McGill University Faculty of Medicine, 3640 University Street, Montreal—Founded in 1823 as Montreal Medical Institution, became the Medical Faculty of McGill University in 1829, first class graduated under the university auspices in 1833 No session between 1836 1839, owing to political troubles In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College Coeducational since 1917 Three years of collegiate work are required for admission The total fees for each of the four medical years are $391 plus $100 for non British subjects The registration for 1946 1947 was 402, graduates 92 The last session began Sept 4, 1946 and ended June 1, 1947 The next session will begin Sept 3, 1947 and will end June 1, 1948 The Dean is Frederick Smith, M D

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal—Organized in 1843 as the Montreal School of Medicine and Surgery In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed Present name by Act of Parliament in 1920 A class was graduated in 1843 and each subsequent year Coeducational since 1925 The requirements for admission are first, a B A degree (or its equivalent), second, one year premedical in the faculty of pure sciences (or an entrance examination on the premedical subjects) An internship is required for graduation The fees average $285 yearly The registration for 1946-1947 was 389, graduates 79 The last session began Sept 16, 1946 and ended May 10, 1947 The next session will begin Sept 15, 1947 and will end May 8 1948 The Dean is Edmond Dube, M D

Laval University Faculty of Medicine, Quebec—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine first class graduated in 1855, and a class graduated each subsequent year The faculty numbers 145 The fees for each of the medical years average $226 for residents of Canada Nonresidents are charged an extra fee of $200 each year The premedical requirement is a B A degree or its equivalent The registration for 1946 1947 was 513 graduates 85 The last session began Sept 12, 1946 and ended June 1, 1947 The next session will begin Sept 17, 1947 and will end June 1, 1948 The Dean is Charles Vezina, M D

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES

MISSISSIPPI

University

University of Mississippi School of Medicine—Organized in 1903 Coeducational since organization A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class Entrance requirement is three years of collegiate work or ninety semester hours of credit Fees average $141 annually There is a nonresident fee of $200 An accelerated program was adopted June 1, 1942 and discontinued June 28, 1946 The last session began Sept 24, 1946 and ended May 31, 1947 (July 3 for sophomores) Additional freshman class admitted Jan 30 1947, will end Sept 27, 1947 Sophomore session began July 7, 1947 and will end April 3, 1948 Another sophomore class begins Nov 3, 1947 and will end July 3, 1948 The Dean is David S Pankratz, M D

MISSOURI

Columbia

University of Missouri School of Medicine—Organized at St Louis in 1845, was discontinued in 1855 but was reorganized at Columbia in 1872 Teaching of the clinical years was suspended in 1909 Coeducational since 1872 The entrance requirements are 90 semester hours of collegiate work An accelerated program was adopted June 15, 1942 and discontinued Sept 21, 1946 The B S degree in medicine is conferred at the end of the second year Total fees for the first year are $266, for the second $255 The registration for 1946 1947 was 73 The last session began Sept 21, 1946 and ended June 5, 1947 The next session begins Sept 16, 1947 and will end June 4, 1948 The Dean is Dudley S Conley, M D

NEW HAMPSHIRE

Hanover

Dartmouth Medical School—Organized by Dr Nathan Smith in 1797 The first class graduated in 1798 It is under the control of the Trustees of Dartmouth College Courses of the third and fourth years were discontinued in 1914 Three years of college work and candidacy for the bachelor's degree are required for admission Candidates for the A B degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year An accelerated program was adopted May 25, 1942 and discontinued June 29, 1946 The tuition is $550 for each year The registration for 1946 1947 was 34 The last session began on September 30, 1946 and ended June 15, 1947 The next session will begin Oct 3, 1947 and will end June 13, 1948 The Dean is Rolf C Syvertsen, M D

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine—Organized in 1890 Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh The first class was graduated in 1903 A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued Coeducational since 1914 Three years of college work are normally required for admission Certificates are awarded on the completion of two years' work in medicine An accelerated program was adopted June 15, 1942 and discontinued in June 1946 The fees for each year are $333 for the first year and $343 for the second year for residents, for nonresidents an additional fee of $100 per year The registration for 1946 1947 was 79 The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years The full program will probably not get under way for three to four years The last session began Sept 16 1946 and ended in June 1947 The next session will begin September 22, 1947 and end in June 1948 The Dean is W Reece Berryhill, M D

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine—Organized in 1905 Offers only the first two years of the medical course Coeducational since organization Three years work in a college of liberal arts are required for admission The B S degree in combined arts medical course is conferred at the end of the second year An accelerated program was adopted June 14, 1943 and discontinued in June 1946 The fees are about $120 each year for resident students and about $200 for nonresidents The registration academic year 1946 1947, was 49 The last session began Sept 23, 1946 and ended June 8, 1947 The next session will begin Sept 24, 1947 and will end June 13, 1948 The Dean is Alfred H Lawton, M D

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences—Organized in 1907 as the University of South Dakota School of Medicine Present title in 1937 Coeducational since organization Offers only the first two years of the medical course Three years work in a college of liberal arts are required for admission Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A B degree The B S degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A B degree An accelerated program was adopted June 15, 1942 and discontinued in September 1946 The tuition is $200 each year for residents and $450 for nonresidents The registration for 1946 1947 was 51 The last session began September 16, 1946 and ended May 25, 1947 The next session will begin September 8, 1947 and will end May 29, 1948 The Dean is Donald Slaughter, M D

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine—Organized in 1902 Gives the first two years of the medical course, but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia Coeducational since organization Entrance requirements are three years of collegiate work The B S degree in medicine is conferred at the end of the second year An accelerated program was adopted June 1, 1942 and discontinued in March 1946 Fees for residents of the state are, respectively, $254 and $264, nonresidents $150 additional each year The registration for 1946 1947 was 57 The last session began Sept 16, 1946 and ended June 2, 1947 The next session will begin Sept 15, 1947 and will end May 31, 1948 The Dean is Edward J Van Liere, M D

CANADA

Saskatchewan

University of Saskatchewan School of Medical Sciences Saskatoon—Organized in 1926 Coeducational Offers the first two years of the medical course Two years of collegiate work are required for admission The B A degree is conferred at the end of the second year The fees are $199 The registration for 1946 1947 was 50 The last session for freshmen began Sept 21, 1946 and ended June 21, 1947 and for sophomores Sept 9, 1946 to July 12, 1947 The next session will begin Sept 22, 1947 and will end June 22, 1948 The Dean is W S Lindsay, M B

ESSENTIALS OF APPROVED RESIDENCIES AND FELLOWSHIPS

(Revised to June 1947; originally published J. A. M. A. 90:922 [March 24] 1928)

Residencies and fellowships in the clinical branches of medicine, surgery and other specialties represent advanced training usually in preparation for the practice of a specialty. Residencies in specialties, as defined by the Council, are straight services of one or more years following an approved internship. A fellowship is a form of advanced training which in some cases is indistinguishable from a residency, although it usually offers greater opportunity for the study of basic sciences and research. Ordinarily a fellowship is a university rather than a hospital appointment. A general residency (also called a "mixed residency") is a general hospital assignment of one or more years after the internship. It usually does not carry credit toward certification by the American boards in the specialties but is *designed rather to provide additional general training.* All approved internship hospitals are also approved for general residencies.

Approved residencies and fellowships may be offered in the following branches of medicine; further information concerning these fields and thoir relationship to the established American boards are given in later sections of these "Essentials":

1. Allergy ‡
2. Anesthesiology *
3. Cardiovascular Disease §
4. Contagious Diseases
5. Dermatology and Syphilology *
6. Gastroenterology †
7. General Residency
8. Internal Medicine *
9. Malignant Diseases
10. Neurological Surgery *
11. Neurology *
12. Obstetrics and Gynecology *
13. Occupational Medicine
14. Ophthalmology *
15. Orthopedic Surgery *
16. Otolaryngology *
17. Pathology *
18. Pediatrics *
19. Physical Medicine
20. Plastic Surgery *
21. Proctology ♯
22. Psychiatry and Neurology *
23. Pulmonary Diseases †
24. Radiology *
25. Surgery *
26. Thoracic Surgery
27. Urology *

I. GENERAL REQUIREMENTS

Registration.—Previous approval as a registered hospital of the American Medical Association is essential for hospitals offering approved fellowships and residencies in specialties. (See the Council's "Essentials of a Registered Hospital.")

This implies that each hospital must be adequately organized, staffed and equipped, and that it be conducted primarily for the welfare of the sick. The educational functions described herein are supplementary to the main purpose of the hospital service but are closely related thereto in that they serve to improve the quality of medical practice.

Size.—The size of the institution is not a primary consideration. The clinical material, however, should be sufficient to enable residents to observe the principal manifestations of the disease conditions in the understanding and management of which they are acquiring further experience.

Plant and Equipment.—The physical plant should be such as to assure good medical and hospital care as well as the safety and comfort of the patients. There should be such equipment, appliances and apparatus as are commonly employed in the specialty in which the training is offered and in the use of which the resident should become proficient.

1. Staff

There should be an organized staff of ethical, licensed physicians holding the degree of doctor of medicine from medical schools acceptable to the Council on Medical Education and Hospitals of the American Medical Association. The particular specialties in which residents are being trained should be represented on the staff by well qualified, experienced and proficient physicians, whether or not they may be certified in a specialty or hold memberships in special societies.

In general hospitals, the staff should be organized into departments in those branches of medicine in which residencies are offered, with a competent director of each service, whose qualifications are acceptable to the Council. The director should assume responsibility for the training of residents and should require others of his staff to give the instruction and sympathetic cooperation which residents require.

It is essential that there shall be at least monthly clinical-pathologic conferences or other regular staff meetings at which the histories, clinical observations, laboratory studies and pathology of selected cases are reviewed. In addition to meetings of the staff as a whole, it is expected that departmental conferences shall be conducted in which residents should take an active part, so that the quality of the service given by that department to its patients may be recurringly evaluated. Other educational activities requiring full support of the staff are described under Training Program, Applied Basic Sciences, and Teaching and Investigation, sections I-8, I-9, and I-10, and Special Requirements, section II.

2. Department of Radiology

The department of radiology should be under the direction of a qualified radiologist proficient in the various functions of his specialty. He must likewise cooperate fully in the training of all hospital residents and supervise any direct contact which they may have with the work of the department. The department should contain appropriate and modern roentgenographic, roentgenoscopic and, where required, therapeutic equipment and radium. It should keep adequate cross-indexed records. These facilities are essential in institutions offering approved residency or fellowship programs in any field.

A description of the special requirements for a residency in radiology is given in section II-24.

3. Department of Pathology

The department of pathology should be under the direction of a qualified pathologist who shall be prepared to cooperate fully in the training of all hospital residents and supervise any direct contact which they have with the laboratory. This department should assume much of the responsibility for the clinical pathologic conferences. The department should provide apparatus, reagents and materials necessary for the operation of a modern clinical and pathologic laboratory, and maintain satisfactory records, with cross-indexing. Adequate necropsy facilities and instruction are also necessary.

A description of the special requirements for an approved residency in pathology is given in section II-17.

4. Necropsies

Thoroughness in postmortem performance should be emphasized. All institutions and individual clinical services desiring approval for the training of residents must maintain a satisfactory percentage of postmortem examinations. Complete necropsy records should be kept on file and each should contain a summary of the clinical record and detailed description of both the gross and the microscopic observations. Residents of all departments should attend postmortem examinations as often as possible. They may, with value, participate in the performance of necropsies; in the analysis of microscopic findings on materials derived from their own service and in the preparation of the protocols.

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* Specialists may be certified in this specialty by an American board fulfilling the Council's "Essentials for Approved Examining Boards in Specialties."

† Specialists may be certified in this specialty by the American Board of Internal Medicine; applicants must first fulfill certification requirements in Internal Medicine.

§ Specialists may be certified in this specialty by the American Board of Internal Medicine; applicants must first fulfill certification requirements in Internal Medicine or Pediatrics.

♯ Specialists may be certified in this specialty by the American Board of Surgery; applicants must first fulfill certification requirements in Surgery.

‡ Specialists may be certified in this specialty by the American Board of Internal Medicine or the American Board of Pediatrics; applicants must first fulfill certification requirements in Internal Medicine or Pediatrics.

5. Medical Library

Institutions offering approved residencies and fellowships should maintain or provide ready access to an adequate medical library containing modern texts and monographs, the Quarterly Cumulative Index Medicus and current scientific and professional journals relating to the fields in which residencies and fellowships are offered. Lists of texts and journals which may be included in the libraries for the various specialties are available from the Council.

6. Histories and Records

There must be complete records, including the patient's complaint, case history, physical examination at the time of admission, a provisional diagnosis, laboratory observations, therapy employed, descriptions of operations if any, suitable progress notes, consultations, final diagnosis, condition on discharge, necropsy observations in case of death if postmortem examination is performed, and an appropriate summary.

The records should show by signatures, or initials, the names of all persons writing them or parts of them as well as the names of the staff members by whom the records are verified. Likewise, all orders and progress notes should be initialed or signed. Each completed history should be verified by a staff member.

The record department should be under the supervision of some competent person, preferably a trained medical record librarian. Alphabetical and diagnostic indexes of the patients should be maintained and the records filed so as to be readily accessible. Operative procedures and radiologic and pathologic material should likewise be classified in a suitable manner. The employment of the Standard Nomenclature of Disease and Operations is strongly recommended.

7. Eligibility of Applicants

Candidates for residencies or fellowships should be selected from graduates of medical schools acceptable to the Council on Medical Education and Hospitals of the American Medical Association who have served an internship in an approved hospital or have had two or more years in practice. It is recommended, however, that candidates seeking residencies or fellowships in such special fields of surgery as urology, orthopedics, plastic surgery, thoracic surgery, neurological surgery or proctology should first have completed one year of general surgical training beyond the internship.

8. Training Program

The educational effectiveness of a residency or fellowship program depends largely on the quality of its supervision and organization. It is important, therefore, that methods of instruction be employed which are best suited to the special field. Emphasis should be placed on bedside instruction, clinical experience, related laboratory studies, teaching rounds, departmental meetings or seminars, clinical-pathologic conferences, demonstrations and lectures. Familiarity with, and critical analysis of pertinent medical literature, is an important feature of residency training.

Aside from the daily contact with patients and the attending staff and participation in the organized educational program, the assumption of responsibility is a most valuable aspect of residency and fellowship training. Consequently, as ability is demonstrated, an increasing amount of reliance should be placed in the judgment of residents in diagnosis and in treatment as well as in the teaching of interns and/or medical students.

From the point of view of medical education, many residencies and fellowships are designed primarily to provide the training required for practice in some specialty of medicine. A given approved residency may not provide complete training in a specialty field, but each service that is properly organized will make a substantial contribution to the program of advanced training. Ordinarily, the duration of an approved residency or fellowship should be at least twelve months and might well be extended to two or more years when suitable facilities are available.

Most residency programs are designed to meet the needs of physicians seeking certification by an American board. Therefore in fields represented by the American boards, the Council seeks to approve only such residencies or fellowships as will be acceptable in whole or in part for admission to the certification examinations.

Although some residency hospitals will benefit by affiliation with medical schools, it is possible to conduct acceptable programs without such affiliation. Many approved hospitals must necessarily organize their residencies independently of medical schools including provision for training in the applied basic medical sciences.

9. Applied Basic Medical Sciences

Competence in any of the various specialties in clinical medicine requires a knowledge of the basic medical sciences employed in that specialty. Therefore, residency and fellowship programs acceptable to the Council and the American boards must provide for training in the applied basic medical sciences. Such training does not necessitate formal course work, specific assigned laboratory exercises, or affiliation of the residency hospital with a medical school; it should be distinctly of an applied nature, closely integrated with the clinical experience of the resident.

Any resident seeking competence or certification in a specialty must be able to apply at least the following basic sciences to his special field of medicine: anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology. Undergraduate education in an approved medical school provides a background for an understanding of these sciences, so that the special training of the residency should not include hasty and inadequate reviews of these subjects, but rather their application to a given specialty.

Anatomy.—Anatomy at the residency level may well be taught, reviewed or learned from the living body, on the operating or examining table or from the fresh tissues in the pathological laboratory. More important in anatomical instruction of residents than an available anatomical laboratory is the attitude and enthusiasm of the hospital staff in availing themselves of opportunities to teach and learn applied gross and microscopic anatomy from clinical and pathological material. Opportunities for anatomical dissection, when available, may be utilized for supplementary training.

Bacteriology.—The hospital facilities and professional personnel in bacteriology, and in the allied sciences of parasitology, mycology, immunology and serology, should be such as to afford the resident opportunity and incentive to broaden his existing knowledge in these subjects in the light of his special clinical assignments and interests.

Biochemistry.—The hospital biochemistry laboratory should provide the resident with opportunities to broaden his knowledge of biochemistry as related to such clinical problems as he may encounter in his specialty; for example, water balance, acid-base equilibrium, glucose tolerance, and blood or urine levels of significant metabolic, nutritional or therapeutic elements. Such applied basic science work in biochemistry may be far more valuable than a formal review course in the field.

Pathology.—In a well conducted department of pathology of an acceptable residency hospital there is opportunity for correlating much basic medical science material with problems of clinical medicine. Applied gross and microscopic anatomy may be effectively learned from necropsy and surgical specimens. The clinical-pathologic conference should and can be one of the most effective devises for correlation of the basic sciences with clinical medicine.

Pharmacology.—Since the principles of pharmacology are involved in every therapeutic administration of chemical substances to patients, the wards of the residency hospitals provide very suitable opportunities for the resident to apply and expand the knowledge of pharmacology previously gained in medical school.

Physiology.—Historically, one of the most fruitful fields of investigation into the normal functions of the body has been the study of abnormality of function to which the resident in clinical medicine is constantly exposed. Clinical medicine affords a rich field for the study of physiology and a potent stimulus to the resident to apply the basic principles of this science. Much of the equipment and special apparatus employed in clinical studies of the patient are likewise used in physiology, so that clinical studies provide ample opportunity and stimulation for the resident to supplement his knowledge of physiology with applications of the science to clinical problems. Encouragement and opportunity for an enlarged understanding of body function in health and disease should be part of the experience of the resident in any of the specialties in the course of his clinical work.

10. Teaching and Investigation

Residents and fellows should be assigned to teaching responsibilities as their experience increases. The stimulating teacher-student relationship should be part of the resident's experience, not only as the student of the attending physician, but as the teacher of interns and nurses and, in medical school hospitals, of junior and senior medical students.

When the facilities of an institution warrant, and when the residents are competent and interested, they should be encouraged to engage in research, not only as an educational experience, but to increase the effectiveness of the hospital and its staff in caring for the sick. Such investigation may take the form of research in the hospital laboratories or wards, summaries of medical literature, or the preparation of statistical analyses derived from the hospital record department.

Affiliation of a residency hospital with a medical school is not essential for an acceptable educational program. Those hospitals having such an affiliation are in a position to provide the interested resident with educational opportunities supplementary to the training required for competence in the specialty. Such opportunities lie particularly in the fields of advanced laboratory training and research. Qualified and interested residents and fellows should be encouraged to undertake research programs at medical schools, within the limitations of available facilities. Interruption of the hospital assignments with a period of research under medical school guidance may be of inestimable value. While medical school affiliations have greatly strengthened residency and fellowship programs, many approved hospitals are able to conduct acceptable programs without such affiliations.

II. SPECIAL REQUIREMENTS

The following regulations pertaining to individual specialties describe the special training, in addition to the foregoing, required for competence in the practice of the various specialties of medicine and for admission to the examinations of the American boards in those specialties. Residents who plan to seek certification by an American board should communicate with the secretary of the appropriate board, as listed in Section IV, to be certain regarding the full requirements for certification.

1. Allergy (See Internal Medicine, Pediatrics.)

2. Anesthesiology

The director of the department should be a qualified physician limiting his practice to anesthesiology and competent to supervise the technical and educational activities of the department. His staff should include an adequate number of trained anesthetists in accordance with the needs of the service.

Equipment must be satisfactory for the teaching of modern methods of anesthesiology and should include suitable apparatus for gas administration, spinal anesthesia, resuscitation and inhalation therapy. Likewise, the clinical material must be sufficient to afford residents adequate experience in the various methods and types of anesthesia now commonly employed. Residencies in anesthesiology should provide systematic clinical and technical instruction supplemented by appropriate seminars, lectures and demonstrations on anatomic and other material.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—It is expected that each resident should administer approximately 500 anesthetics a year.

Applied Basic Science Instruction.—Applied anatomy, biochemistry, pharmacology and physiology are especially desirable and should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Anesthesiology requires candidates for the certification examination to have five years after the internship of active experience limited to anesthesiology, of which at least two years is devoted to acceptable supervised clinical training in this specialty.

3. Cardiovascular Disease (See Internal Medicine.)

4. Contagious Diseases

Training programs in contagious diseases might well follow the general pattern of work described for internal medicine or pediatrics, or both.

Although there is no certification in contagious diseases as such, training credit for six months in approved residencies in this field may be granted by the American Boards of Internal Medicine and of Pediatrics. A well balanced service is essential for residency training in contagious diseases. Between 300 and 400 admissions a year may be considered sufficient, especially if most of the acute contagious diseases are well represented.

5. Dermatology and Syphilology

The practice of dermatology and syphilology is concerned largely with ambulatory patients, so that it is essential that an active outpatient service be available to furnish sufficient clinical material in the various divisions of the specialty. It is also desirable that hospital facilities be available and that residents be given an opportunity to observe the dermatologic manifestations of the acute contagious diseases. There should be a well organized course of instruction involving lectures, seminars, clinical demonstrations and laboratory assignments, especially in histopathology, parasitology, mycology, and immunology. To facilitate clinical and laboratory teaching it is essential that the department have ready access to an adequate supply of classified anatomic and pathologic material including histologic and lantern slides for demonstrations. Projection apparatus should be available and also facilities for clinical photography.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—Ordinarily a minimum of 1,500 new outpatients a year is considered essential in the dermatologic division and a similar number in syphilology.

Applied Basic Science Instruction.—The residency should include organized study in the various applied basic sciences as related to clinical dermatology, especially in bacteriology, immunology, mycology, parasitology, serology, biochemistry, embryology, histology, pathology, pharmacology and physiology, as well as physics as related to therapy by physical agents. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Dermatology and Syphilology requires candidates for the certification examination to complete three years of systematic instruction after the internship and two additional years of study or practice. The period of specialized training following internship shall include not less than eighteen months of active experience in clinical dermatology and syphilology and organized study in the applied basic medical sciences.

6. Gastroenterology (See Internal Medicine.)

7. General Residency

General residencies (also called "mixed residencies") are hospital assignments of a general type after the internship. While providing additional general training, they ordinarily carry no credit toward certification by the specialty boards. All hospitals approved for intern training are automatically accredited for general residencies. Other general hospitals may be approved for such work provided (*a*) they conform to the general requirements for residency training, as described in Section I of these essentials and (*b*) there is an admission rate of at least 1,500 patients per year.

8. Internal Medicine

Residencies and fellowships in internal medicine should be organized on a broad basis to furnish instruction in the various specialties which combine to form the foundation of practice in internal medicine. Accordingly, the service should not be limited entirely to general medicine and its subdivisions of allergy, cardiovascular disease, gastroenterology, metabolic diseases, contagious diseases and pulmonary diseases but might well include a reasonable amount of instruction in the divisions of psychiatry and neurology, dermatology and syphilology, and pediatrics, now organized as independent specialties.

In institutions offering residencies and fellowships in internal medicine, and in the special fields of allergy, cardiovascular disease, gastroenterology or pulmonary diseases, emphasis should be placed on the educational features of the service and residents should receive regular instruction from members of the staff in methods of clinical study and diagnostic and therapeutic procedures. Of particular importance is the study of etiology, pathogenesis, symptomatology and course of the various diseases so that the residents may develop skill and accuracy in diagnosis as well as a mature judgment and resourcefulness in therapy.

Under the supervision of qualified members of the staff the residents should assume individual responsibility in actual case management. They should also be required to correlate clinical studies with postmortem pathology, review medical literature and take an active part in weekly teaching rounds, departmental seminars and clinical-pathologic conferences.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—For approval a residency in internal medicine should have at least 400 annual admissions.

Applied Basic Science Instruction.—Anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology are especially desirable and should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Internal Medicine requires candidates for the certification examination to have an approved internship of at least twelve months, three years of special training and two additional years of practice in the field of internal medicine or its more restricted and specialized branches. Not more than one year of instruction in the related medical specialties and basic sciences can be applied to the three year period of special training. General (or "mixed") residencies are ordinarily not regarded as satisfying any part of the required training. Also, a second year of internship will be recognized only if the second year is limited entirely to the medical service in a hospital which is approved by the Council on Medical Education and Hospitals for resident training in internal medicine. Physicians seeking certification in one of the special branches of internal medicine (i.e., allergy, cardiovascular disease, gastroenterology and pulmonary diseases) must first fulfill all the requirements for certification in internal medicine, including the examination.

Special Fields of Internal Medicine.—Residencies may be offered in the special fields of allergy, cardiovascular disease, gastroenterology or pulmonary diseases. Residencies in these fields should follow the general pattern described above for internal medicine as well as the following:

Allergy (See also allergy under pediatrics).—The objective of intensive training in allergy is to fit the physician for the highest type of practice, teaching and research in this specialty. A residency in allergy should comprise at least one though preferably two years of full time work. Residents in allergy should be given a thorough training in the fundamentals of human and animal sensitization through clinical study and laboratory experiments. There should be daily conferences or consultations with the staff. Reading of current articles and reviews of special topics should be assigned. Residents should be given responsibility for diagnosis and management of various diseases of allergy, for the teaching of interns, medical students and nurses as capability has been demonstrated. Problems in clinical or laboratory allergy should be utilized to develop an interest in research.

If the allergy service is not under the Department of Medicine, it should have inter-departmental associations so arranged as to give residents of the allergy unit continuing contact with the general medical (or pediatric) services through ward rounds, clinical-pathologic conferences, staff meetings, and so forth. The service should admit 200-300 ambulatory patients yearly, and have facilities for hospitalizing bed patients, in addition to cases seen in consultation with other services. It should have adequate laboratory facilities for those special chemical-immunologic, pathologic and bacteriologic procedures required in its field. The training of residents in allergy should be arranged to fit into the established programs of the American Boards of Internal Medicine or Pediatrics. Candidates for positions offering specialized training in allergy should previously have fulfilled the basic requirements of the parent board before undertaking study in the special field.

Certification in allergy is granted only to those who have previously fulfilled all the requirements for certification in internal medicine or pediatrics, including the examination.

Cardiovascular Disease.—In general, residencies in this field should follow the general pattern of residencies in internal medicine. There should be opportunities and facilities for the study of all types of cardiovascular disease, both acute and chronic. It is important that there be adequate opportunity for the study of such cardiac disorders in childhood as rheumatic heart disease and congenital abnormalities. There should be provisions for experience with peripheral vascular disease and electrocardiography. Clinical or experimental investigation should be encouraged. The number of patients admitted to this service may not be an accurate index of the available clinical material, since a large part of the material is commonly supplied on a consultation basis.

Certification in cardiovascular disease is granted only to those who have previously fulfilled all the requirements for certification in internal medicine or pediatrics, including the examination.

Gastroenterology.—Training in gastroenterology should take place not only in the hospital but also in the outpatient clinic. A hospital service of at least 10 beds or 200 admissions a year and work in a well organized gastroenterologic clinic for ambulatory patients admitting at least 200 patients a year should be considered sufficient, provided the service and its staff are acceptable. The resident, in addition to working in the department, should have careful instruction in actual care of patients and the following diagnostic and therapeutic measures: (*a*) fluoroscopy and the interpretation of roentgenograms of the gastrointestinal tract and its accessory organs; (*b*) endoscopy, including proctoscopy, gastroscopy and peritoneoscopy; (*c*) laboratory procedures, including analysis of gastric contents, bile and feces, tests of hepatic and pancreatic function, and the evaluation of these and ancillary laboratory findings with respect to their bearing on disease and disorders of the gastrointestinal and biliary tract; (*d*) the surgical aspects of gastrointestinal diseases, including consultation with surgeons, recognition of indications for operation, familiarity with operative procedures, and presence at operations on gastroenterologic patients wherever possible and (*e*) medical care of gastrointestinal diseases, including careful study of diet and nutrition, and the effects of drugs and other therapeutic measures on the gastrointestinal tract.

Original research work in gastroenterology could well be included in the previous residency in internal medicine and continued in the gastroenterologic residency fellowship only so far as it would not interfere with the essential training program outlined above.

Certification in gastroenterology is granted only to those who have previously fulfilled all the requirements for certification in internal medicine, including the examination.

Pulmonary Diseases.—Training in pulmonary diseases should be of such a character that residents may become thoroughly familiar with the various phases of institutional service in pulmonary diseases as well as the community aspects of tuberculosis control. This necessitates a well organized program of instruction with rotating assignments in the admitting department, infirmaries, convalescent and ambulatory wards and the outpatient clinics. Careful instruction should be provided in diagnosis, interpretation of roentgenograms, therapeutic procedures and general sanatorium care. It is particularly important that the residents become fully acquainted with the use of air or gas injection and the technic of the initial induction as well as the subsequent refills. If a surgical department is maintained, the operative service may be combined with the general training in pulmonary diseases or it may form the basis of a separate residency in thoracic surgery.

It must be emphasized that residencies in pulmonary diseases are educational in character and that of the full time sanatorium staff only those physicians who serve primarily on an educational basis come within the residency classification of the Council.

The clinical material must be adequate in kind and amount. Approximately 125 inpatients a year may be sufficient for a residency in pulmonary diseases.

Certification in pulmonary diseases is granted only to those who have previously fulfilled all the requirements for certification in internal medicine, including the examination.

9. Malignant Diseases

The division of malignant diseases is largely a combination of services involving practically all the branches of medicine and surgery, including pathology and radiology. It is important, therefore, that competent staff physicians be assigned to all departments and that special facilities be available for pathology, operative surgery, diagnostic roentgenology, therapeutic roentgenology and radium therapy.

The clinical material should be sufficient in kind and amount to enable residents to observe and study the various types of malignant diseases and the methods of therapy commonly employed. A teaching service should have approximately 350 inpatients a year and additional material in the outpatient tumor clinic.

Ordinarily, the training is general in type with assignments in clinical diagnosis, pathology, surgery, diagnostic roentgenology, therapeutic roentgenology and radium therapy. Courses in surgical and postmortem pathology, radiophysics and radiobiology are often included. In some instances the service is limited in scope and is utilized primarily as supplementary training in surgery, pathology, or radiology.

Although there is no certification in malignant diseases as such, some credit toward eligibility for the certification examinations may be granted by the American Boards of Surgery, Pathology and Radiology.

10. Neurological Surgery

Institutions offering residencies in neurological surgery should provide adequate facilities for the practice and teaching in this field. The clinical material must be sufficient to provide experience in the various phases of the subject. It should include an adequate number of cases of traumatic injury of the central nervous system, cerebral and spinal neoplasms, and surgical disorders of the peripheral and sympathetic nervous systems. Close contact between the residents and the neurological surgeons and others responsible for the diagnosis and care of the patients is essential. It is likewise essential that the resident staff participate actively in the diagnosis, operative treatment and post-operative care of the patients and not serve merely as onlookers. The residency should constitute a full time service. The period of training should be chiefly clinical rather than didactic. It should be concerned primarily with the diagnosis and treatment of neurosurgical disorders. With this training program there should be a concurrent program of training in the applied basic sciences, in diagnostic neurology, and in neurological roentgenology and ophthalmology. To qualify for approval for the three full years of training in this field a residency must provide experience in all the phases of neurological surgery. However, some residencies may qualify to supply a part of the requisite training in one or more of the essential phases.

The surgical training should be sufficient to insure a reasonable degree of technical experience and skill. The resident should have the opportunity to undertake some operative work under competent supervision, especially toward the end of his training program.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—An acceptable residency in this field requires an annual admission rate of at least 150 patients.

Applied Basic Science Instruction.—Organized basic science work as applied to neurological surgery is especially desirable in anatomy, pathology and physiology. This should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Neurological Surgery requires candidates for the certifying examination to have at least one year of general surgical training or a one year's assistant residency in general surgery before beginning their training in neurological surgery. The special training in neurological surgery consists of at least three years training in an approved residency. A period of two years of practice or further study in the specialty is also required.

11. Neurology (See Psychiatry and Neurology.)

12. Obstetrics and Gynecology

Institutions offering residencies or fellowships in obstetrics and/or gynecology must provide gynecological and/or obstetric facilities adequate for the clinical and teaching needs of the service. They should also furnish sufficient teaching material to afford residents a wide experience in clinical diagnosis, treatment, and technical and operative procedures.

Emphasis should be placed on clinical training in order that residents may receive ample instruction in the various phases of obstetric and gynecologic service, such as antepartum care, treatment of toxemias of pregnancy, management of normal and abnormal labor, technic of versions, breech extractions and instrumental delivery, diagnosis and treatment of the complications of labor, postpartum hemorrhage, puerperal infections, varieties of cesarean section and their indications, medical gynecology and its relation to endocrinology, minor procedures for ambulatory patients, and standard operations. Courses of instruction should include assignments in pathology, demonstrations on the manikin, departmental seminars, clinical-pathologic conferences and teaching rounds. Training in surgical technic should be sufficient to enable residents to undertake operative work on their own responsibility especially toward the end of the residency program. Prenatal and follow-up clinics are essential to the program.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—Ordinarily an admission rate of 400 patients a year is desirable in each of the fields of obstetrics and gynecology whether these are separate or combined services.

Applied Basic Science Instruction.—Applied anatomy, bacteriology, biochemistry, embryology, pathology and physiology are especially desirable and should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Obstetrics and Gynecology requires candidates for the certification examination to have completed a year of internship and seven years of practice including at least three years of acceptable training in obstetrics and gynecology. Although an applicant may be practicing primarily in one of the branches (obstetrics or gynecology), a knowledge of the fundamentals of the other branch is required.

13. Occupational Medicine

Residencies and fellowships in this field should be organized in the light of the principal components of occupational medicine: health conservation, occupational medicine and surgery, environmental hygiene and administration. To provide such training there should preferably be a combination of hospital and industrial in-plant assignments.

The hospital shall meet the general requirements for residency approval. There should be organized services in the hospital under competent staff direction in internal medicine, dermatology, ophthalmology, traumatic surgery, neurology and psychiatry. A well equipped rehabilitation center should be supplied. A hospital affiliated with a medical school or school of public health is in an especially favorable position to offer an acceptable program.

The collaborating industrial medical department, providing in-plant training, should be of sufficient size and scope to accommodate the requirements of the plant and shall be under full time medical direction. The medical director should derive his authority in the plant from the officer directly responsible for policy and operations. The plant should provide facilities and equipment and teaching material required for the training of a resident. Dressing and examination rooms, clinical and x-ray laboratories, wards and departments of physical medicine should be available. Physicians in training should become familiar with records pertaining to (1) individual medical services and examinations, (2) plant inspections and technical industrial hygiene studies and (3) absentee analysis and control measures. A well equipped laboratory and library of industrial hygiene should be readily accessible in the plant or through close affiliation with appropriate laboratories and libraries outside the plant. Monthly and annual summary reports should be prepared outlining the work of the department.

There is no certifying board in this field.

14. Ophthalmology

Acceptable residencies in this field should include active clinical experience in the diagnosis, therapy and surgery of ophthalmic disorders. There should be adequate experience with refraction, disorders of motility and binocular vision, perimetry, ophthalmoscopy, retinoscopy and the use of the slit lamp. There must be adequate equipment and facilities for such work. There should be an active consultation service provided to other departments of the hospital.

A systematic course of instruction should be offered with regular lectures and demonstrations in clinical and operative ophthalmology. Instruction in surgical technic should be sufficient to enable residents to undertake operative work on their own responsibility, especially toward the end of the training period.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—Ordinarily a minimum of 150 admissions and 1,500 outpatient visits a year is considered necessary for residency training in this specialty.

Applied Basic Science Instruction.—Histologic and pathologic material should be available for demonstration and individual study. Applied basic science work in anatomy, bacteriology, embryology, histology, pathology, pharmacology and physiology as relates to the eye should be included in the training program. Such work should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Ophthalmology requires candidates for the certification examination to have completed an internship of one year and a period of combined study, training and practice of not less than three years. A combined service in ophthalmology and otolaryngology should fulfill the requirements listed under each department except that five years of training and experience should constitute the minimum time required for certification in both fields.

15. Orthopedic Surgery

Surgical and orthopedic facilities must be satisfactory and clinical material sufficient to afford residents adequate experience in the correction of congenital and acquired deformities and in the treatment of fractures and other acute and chronic disorders which interfere with the proper function of the skeletal system and its associated structures. Residents should become thoroughly familiar with all methods of diagnosis and treatment, corrective exercises, physical medicine, operative procedures and the use of orthopedic appliances. Instruction in surgical technic should be sufficient to enable residents to undertake operative work on their own responsibility, especially toward the end of the residency program. Clinical instruction should include teaching rounds and departmental conferences.

Residencies may be organized in the fields of adult orthopedics, children's orthopedics, fractures or in combinations of these. As preliminary training the Council recommends one year of general surgery in addition to the internship.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—Both hospital and outpatient facilities are desirable, and institutions offering residency instruction should treat a minimum of 200 patients annually.

Applied Basic Science Instruction.—Anatomy, bacteriology, biochemistry, embryology, pathology and physiology are especially desirable and should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Orthopaedic Surgery requires candidates for the certification examination to have completed one year of internship, three years of concentrated training in orthopedic surgery and two years of subsequent practice in this special field. The training period should consist of balanced training in the fields of adult orthopedics, children's orthopedics, fractures and the applied basic sciences. Candidates may substitute a year of adult orthopedics and fractures for work in children's orthopedics. Candidates applying for certification after January 1, 1951, must also have completed an approved surgical residency of one year following the internship.

16. Otolaryngology

Residencies and fellowships in otolaryngology should aim to provide adequate clinical and operative experience. Essential equipment for diagnosis and surgery should be available, including an audiometer and other special apparatus depending on the scope of the service. The clinical material should be sufficient in variety and amount to provide adequate training in the various divisions of the service, which might advantageously include the field of bronchoscopy.

The training should include a systematic course of instruction with demonstrations on clinical and technical subjects pertaining to the various phases of otolaryngology. Instruction in surgical technic should be sufficient to enable residents to undertake operative work on their own responsibility, especially toward the end of the residency program.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—Ordinarily a residency program in otolaryngology requires clinical experience in a hospital which affords in the specialty a minimum of 400 admissions a year and at least 3,500 visits in the outpatient department.

Applied Basic Science Instruction.—There should be training in the applied anatomy of the ear, nose, throat, neck, chest and esophagus including the related nervous systems. Applied bacteriology, embryology, pathology, pharmacology and physiology should also be included and should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Otolaryngology requires candidates for the certifying examination to have an approved internship and three years of advanced preparation. A combined service in ophthalmology and otolaryngology should fulfill the requirements listed under each department except that five years of training and experience should constitute the minimum time required for certification in both fields.

17. Pathology

Residencies and fellowships, in contrast to the shorter courses for basic training in pathology, are ordinarily of one to three years' duration. The teaching material must be sufficient in kind and amount to afford residents adequate training in all divisions of the field including both gross and microscopic pathology. Systematic instruction should be carried out with the use of fresh material and collections of slides and museum specimens for comparative studies in histology and pathology. As the training continues an increasing amount of responsibility should be assigned to the residents in tissue diagnosis, in actual performance of postmortem examinations and in the preparation of pathologic reports and necropsy protocols. Further instruction should be obtained through active participation in clinical-pathologic conferences, staff meetings and joint conferences with other departments.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

The relationship of the pathology service to residencies and fellowships in other fields is given in Section I-3.

Quantitative Requirements.—At least 100 necropsies a year should be performed in institutions offering residencies or fellowships in pathology.

Board Requirements.—The American Board of Pathology requires candidates for the certification examination to have completed, in addition to the internship, a period of study of at least three calendar years, including one year in the various phases of clinical pathology and not less than two years of training and experience in a department of pathologic anatomy. Such training may be combined or in sequence. An additional year of training or practice in pathology is likewise required.

18. Pediatrics

Clinical training should be obtained in general medical pediatrics, nutritional disorders, care of newborn infants, preventive pediatrics and outpatient clinics in the various departments of medical pediatrics. Correlative studies are recommended especially in contagious diseases, in clinics for well babies, the mentally deficient and in those with neurologic disorders or who present problems in behavior. In the wards and in the clinics the residents should be permitted to assume individual responsibility in diagnostic and therapeutic procedures and case management. They should actively participate in teaching rounds, clinical-pathologic conferences, departmental seminars and all other functions designed to improve the quality of the clinical and educational service. Although the training need not be continuous or in the same institution, it is desirable that the educational program be systematized in the form of residencies of one to three years' duration.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—To supply an adequate amount and variety of teaching material a department should provide a minimum of approximately 400 annual admissions in general medical pediatrics.

Applied Basic Science Instruction.—Sufficient time should be devoted to studies in applied basic sciences, especially in embryology, growth and development, nutrition, and other fields in physiology bearing upon pediatrics. This work should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Pediatrics requires candidates for the certification examination to have completed five years of training and practice after graduation from an approved medical school. The requirements include an approved internship of one year, a service of two years of acceptable training in pediatrics which may include a six months residency in contagious diseases and two additional years of specialized study or practice. Physicians who have met the requirements for certification in this field may seek further certification by this board in the special field of allergy, or certification in cardiovascular disease by the American Board of Internal Medicine.

Allergy. (See also Allergy under Internal Medicine.)—The objective of intensive training in allergy is to fit the physician for the highest type of practice, teaching and research in this specialty. An allergy residency should be at least one, though preferably two years of full time work. Residents in allergy should be given a thorough training in the fundamentals of human and animal sensitization through clinical study and laboratory experiments. There should be daily conferences or consultations with the staff. Reading of current articles and reviews of special topics should be assigned. Residents should be given responsibility for diagnosis and management of various diseases of allergy, for the teaching of interns, medical students and nurses as capability has been demonstrated. Problems in clinical or laboratory allergy should be utilized to develop an interest in research.

If the allergy service is a separate department, it should have interdepartmental associations so arranged as to give residents of the allergy unit continuing contact with the pediatric (or general medical) services through ward rounds, clinical-pathologic conferences, staff meetings, and so forth. The service should admit 200-300 ambulatory patients yearly, and have facilities for hospitalizing bed patients, in addition to cases seen in consultation with other services. It should have adequate laboratory facilities for those special chemical-immunologic, pathologic and bacteriologic procedures required in its field. The training of residents in allergy should be arranged to fit into the established programs of the American Boards of Pediatrics or Internal Medicine. Candidates for positions offering specialized training in allergy should previously have fulfilled the basic requirements of the parent board before undertaking study in the special field.

Certification in allergy is granted only to those who have previously fulfilled all the requirements for certification in pediatrics or internal medicine, including the examination.

19. Physical Medicine

The field of physical medicine includes all clinical and diagnostic uses of physical agents except those employed in radiology. Consequently, training and experience should be obtained in all divisions of this specialty including rehabilitation, sheltered work shop experience and occupational therapy. Mastery of the basic sciences and the technics used in physical therapy are essential, and experience in using these technics as well as supervising others in their use should be included in the experience of the resident. Orthopedic, psychiatric, tuberculous, general medical, general surgical and pediatric patients receiving physical therapy should be assigned to the department.

Adequate space and apparatus should be furnished in the department for all phases of the work The clinical material should be sufficient in kind and amount to enable the residents and fellows to observe and study all forms of treatment in physical medicine. Both inpatient and outpatient clinical material should be available.

As the resident progresses in this training program, a broader type of experience should be gained with increasing responsibilities in the functioning of the department, teaching various personnel, research, liaison with other departments and vocational counseling.

A minimum of three years of such training is generally considered necessary for a physician to become competent in the field of physical medicine. If a hospital is not equipped to offer this entire program, occupying three years, shorter training periods of one or two years may be organized or affiliations may be made with other units where the training and experience can be obtained on a full time assignment

20. Plastic Surgery

Adequate training and experience in plastic surgery should include experience in the various methods of plastic surgery of the scalp, face, jaw, neck, trunk and extremities. The resident should obtain experience in the various methods of skin, pedicle, flap, soft tissue and cartilage grafting. If the department of plastic surgery does not perform reconstruction operations on joints, tendons, nerves, perineum, extrophies or hypospadias it might be desirable to have the residents in training for plastic surgery witness such operations and study the progress of patients with such disorders.

Training in plastic surgery should be preceded by an approved internship and two years of residency training in general surgery, in which the resident becomes familiar with basic principles and procedures common to all surgery.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—A minimum of 150 individual plastic surgery patients cared for during the year is desirable to provide sufficient clinical material for the residents.

Applied Basic Science Instruction.—Applied basic science work in anatomy, bacteriology, biochemistry, pathology and physiology as related to plastic surgery should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Plastic Surgery requires candidates for the certification examination to have an approved internship of one year and at least six additional years of special training and practice as follows: two years of residency training in general surgery, two years of residency training in plastic surgery, and two additional years of practice or study in surgery a fair percentage of which shall be in plastic surgery.

21. Proctology (See Surgery.)

22. Psychiatry and Neurology

Residencies may be offered in either of these fields separately or in a combination of the two. In the training program, which may be of one to three years duration, depending upon the resources of the institution, emphasis should be placed on the educational features of the service, and the residents should receive regular instruction from members of the staff in general orientation in the specialty and diagnostic and therapeutic procedures and methods of clinical study, as well as in the organization of ward services. Administrative details and "paper work" should be kept within bounds so that the residents may employ their time in the study and treatment of neurologic and psychiatric disorders. Emphasis should be placed on the study of etiology, pathogenesis, symptomatology and course of the various diseases so that the residents may develop skill and accuracy in diagnosis, as well as mature judgment based on knowledge of the natural history of the diseases, and resourcefulness in therapy. There should be organized instruction in the fundamentals of psychopathology, psychotherapy and the dynamics of mental or emotional illness.

A rotating assignment in psychiatry is essential to give residents adequate experience in the various phases of in and outpatient psychiatry. Residents in psychiatry and neurology should have adequate contacts with other services, such as general medicine, pediatrics, tuberculosis services and so forth, so that they may become familiar with psychiatric and neurologic complications of general disease. Whenever possible neurologic residents should follow their patients through whatever neurosurgical operations are performed in the hospital. Teaching rounds, clinical and pathologic conferences and seminars are essential for clinical instructions in both fields.

The clinical material must be adequate in kind and amount. Too small a number of admissions prevents proper survey of the field of psychiatric and neurologic disorders. Numbers which are too large are incompatible with the adequate study of the patients admitted.

Some six months in specialized institutional psychiatry (feeble-minded, epileptic, penologic, drug and alcohol, and so forth) is of great value to the psychiatric residents as is six months of even half time duty in child psychiatry and experience in working with psychologists and psychiatric social workers.

It must be emphasized that residencies in psychiatric and neurologic hospitals are educational in character and that, of the full time psychiatric or neurologic staff of such hospitals, only those physicians who serve primarily on an educational basis come within the residency classification of the Council.

See also the General Requirements for all residencies as given in Section I of these "Essentials."

Quantitative Requirements.—The clinical material must be adequate in time and amount. Between 200 and 400 admissions a year per resident is considered desirable.

Applied Basic Science Instruction.—There should be instruction in the application to psychiatry and neurology of the basic sciences of anatomy, physiology and pathology. Such work should be closely correlated with clinical experience. See Section I-9 of these "Essentials" for a discussion of applied basic medical science instruction.

Board Requirements.—The American Board of Psychiatry and Neurology certifies physicians in either or both of these fields. Specialized training and experience of at least five years after the internship is essential to qualify for the certification examinations in neurology or in psychiatry. The requisite training consists of three full years of approved residency training after the general internship and two additional years of practice and experience in psychiatry or neurology or both. To qualify in both fields a minimum of seven years is required.

23. Pulmonary Diseases (See Internal Medicine.)

24. Radiology

Residencies and fellowships of three years duration should provide training in all divisions of the specialty—diagnostic roentgenology, therapeutic roentgenology and radium therapy. Without attempting to define a detailed plan of instruction it can be suggested that the first year be devoted principally to pathology, roentgenologic technic and a general orientation in the radiologic field. In the second and third years the clinical applications of radiology should be emphasized with at least six months assigned exclusively to radiotherapy. In view of the importance of pathology as a basis for radiologic diagnosis and therapy it is recommended that a minimum of six months be devoted to pathologic anatomy, particularly the study of gross pathology and tumors. Instruction in radiophysics and radiobiology may well run concurrently with the training in radium therapy and therapeutic roentgenology.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

An American board in a specialty is organized (*a*) to assist in improving the quality of graduate education in that field, (*b*) to establish minimum educational and training standards in the specialty, (*c*) to determine whether candidates have received adequate preparation, (*d*) to provide comprehensive examinations to determine the ability and fitness of such candidates and (*e*) to certify to the competence of those physicians who meet these requirements.

In 1933 the Council on Medical Education and Hospitals was authorized by the House of Delegates of the American Medical Association to formulate standards and to approve examining boards in the specialties which meet these standards. These standards were formulated and ratified by the House of Delegates in 1934. The most recent revision of these Essentials was approved Dec. 9, 1946.[1] The minimum requirements for certification were not increased, but various sections were rewritten for clarification. The "Essentials" outline the purpose and function of a specialty board, organization, definition of special fields, qualifications of candidates including professional education and special training, procedure to follow in the establishment of an acceptable board, mechanism for approval of a residency in a recognized specialty and withdrawal of approval to holders of certificates or from institutions offering residency training.

In 1933-1934 the Advisory Board for Medical Specialties was organized with representatives from each of the approved boards to "act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists." The Council on Medical Education and Hospitals and the Advisory Board for Medical Specialties work in close collaboration through joint meetings and frequent conferences.

Prior to 1934 there were five examining boards in the medical specialties functioning, and since 1940 fifteen boards have been in operation. All these boards are fully approved by the Council. A key number has been designated for each board, such as A. B. 1, and the biographic records of physicians published in the American Medical Directory include by this means reference to those certified by these boards.

Each of the American boards has published a booklet containing a brief statement regarding its personnel, organization, purposes and qualifications for eligibility for certification. The current data pertaining to each board is reproduced in the following pages. There is also included the regulations of the Advisory Board for Medical Specialties.

In 1946 three boards certified candidates in subspecialties. The American Board of Internal Medicine certified in allergy, cardiovascular disease, gastroenterology and pulmonary diseases (formerly called tuberculosis). Similarly the American Board of Surgery certified specialists in proctology. The American Board of Pediatrics has developed procedures for certifying pediatricians in allergy and has certified five physicians to date. Regular board certification is a prerequisite for certification in the subspecialty. This function of these boards in internal medicine, surgery and pediatrics certifying specialists in the subspecialties is also approved by the Council. These subspecialties are fully recognized by the Council on Medical Education and Hospitals of the American Medical Association. As such they are appropriate fields in which to organize residency training when the facilities warrant. Approved training programs will be listed under these headings in the Council's official list of approved residencies whenever the subspecialty board so desires. The list of hospitals offering "Approved Residencies and Fellowships in the Specialties" also appears in this issue.

A list of the approved specialty boards and the number of certificates awarded prior to March 1, 1946 and the number certified to March 1, 1947 respectively appear in table 29. On March 1, 1946 there were 26,072 physicians certified by the fifteen boards, and in the year ended March 1, 1947, 2,404 were certified. Up to this date a total of 28,476 had been certified.

TABLE 29.—*Approved Examining Boards in Medical Specialties*

Key No.	Name of Board	Year of Incorporation	Total Certificates Awarded to March 1, 1946	Total Certificates Awarded to March 1, 1947
A.B. 1.	American Board of Pediatrics	1933	2,420	2,572
A.B. 2.	American Board of Psychiatry and Neurology	1934	1,993	2,438
A.B. 3.	American Board of Orthopaedic Surgery	1934	940	1,042
A.B. 4.	American Board of Dermatology and Syphilology	1932	753	844
A.B. 5.	American Board of Radiology	1934	2,198	2,366
A.B. 6.	American Board of Urology	1935	1,050	1,136
A.B. 7.	American Board of Obstetrics and Gynecology	1930	1,965	2,137
A.B. 8.	American Board of Internal Medicine	1936	3,906	4,449
A.B. 9.	American Board of Pathology	1936	1,240	1,359
A.B. 10.	American Board of Ophthalmology	1917	2,490	2,564
A.B. 11.	American Board of Otolaryngology	1924	3,886	3,958
A.B. 12.	American Board of Surgery	1937	2,620	2,904
A.B. 13.	American Board of Anesthesiology	1938	278	316
A.B. 14.	American Board of Plastic Surgery	1937	163	171
A.B. 15.	American Board of Neurological Surgery	1940	170	190
	Totals		26,072	28,476

Included in the 28,476 certified in major specialties are 882 who were also certified in subspecialties by the boards in internal medicine, pediatrics and surgery as follows:

Internal Medicine	
Allergy	95
Cardiovascular Disease	361
Gastroenterology	183
Pulmonary Diseases (formerly called "Tuberculosis")	163
Pediatrics	
Allergy	5
Surgery	
Proctology	75
Total	882

The greatest number in any one specialty were certified in internal medicine: 4,449 to March 1, 1947. Of this number 543 were certified in the past year. During the past year also 445 were certified by the board in psychiatry and neurology, bringing the total certified by this board to 2,438. Significant increases in the last year were also noted in surgery (284), obstetrics and gynecology (172), radiology (168) and pediatrics (152). Neurological surgery certified 20 and plastic surgery 8. The oldest board in existence, ophthalmology (organized in 1917) certified 74 last year, bringing the total certified to date to 2,564. Heretofore the greatest number certified in any one specialty was in otolaryngology. In this specialty 3,988 have received the board's certificate since its organization in 1924.

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[1] J. A. M. A. **134:** 288 (May 17) 1947.

Table 30 gives the annual number of specialists certified by all boards for the past seven years and the accumulated totals. The largest number (2,404) obtained certificates in the period from March 1, 1946 to March 1, 1947. Of all those physicians now certified, 12,623 (44 per cent) received their specialty credentials in the past seven years.

Table 30.—*Annual Specialty Board Certifications Since 1940*

Year (Ended March)	Number of Boards in Existence	Number Certified That Year	Accumulated Totals
1940	14	....	15,851
1941	15	2,085	17,936
1942	15	1,758	19,694
1943	15	2,172	21,866
1944	15	1,578	23,444
1945	15	1,308	24,752
1946	15	1,320	26,072
1947	15	2,404	28,476

Ten boards recognize training with a qualified preceptor as a substitute for special clinical training. The policies of the boards toward the acceptance of such training are briefly outlined in table 31. The time credit allowed varies but in all instances is decided on an individual basis. The individual facilities and teacher qualifications of the preceptor must be approved by the respective board. This type of training is not accepted by five boards.

Table 31.—*Specialty Board Credit for Preceptorship Training*

		Preceptor Limitations			
	Credit Awarded	Any Certified Board Member	Other Than Certified Board Member	List of Preceptors Maintained	Maximum Clinical Training Credit
Anesthesiology	Yes	No[1]	Yes (rarely)[1]	No	2 years
Dermatology	Yes	No[1]	No	Yes	[3]
	No	...	...	...	....
	Yes	No[1]	No	No	No limit set
	Yes	Yes	Yes[1]	No	No limit set
	Yes	No[1]	Yes[1]	No	No limit set
	Yes	Yes	No	No	3 years
	Yes	Yes	Yes[1]	No	5 years [4]
	No	...	...	...	....
	No	...	...	...	....
	Yes	Yes	No	No	Full credit
	No	...	...	...	....
Radiology	No	...	...	...	....
Surgery	Yes	No[1]	No	No	2 years
Urology	Yes	Yes[2]	No	No	3 years

1. Facilities and teacher qualifications must be approved by board.
2. Board member must certify training facilities are adequate and must certify at end of training period that candidate has had adequate training.
3. Two years, half time, one half of each day being spent in an approved institution; or one year full time in the preceptor's office in localities where approved institutions are not available.
4. Six years required after July 1950.

Only four of the boards will give consideration to preceptor training carried out under a qualified specialist who is not himself certified by the appropriate board. One board maintains a list of preceptors.

The third edition of the "Directory of Medical Specialists," compiled by the Advisory Board for Medical Specialties, was published in 1946 and includes biographic data pertaining to the graduate educational background of each of the specialists certified by an American board. This directory lists 24,028 specialists certified prior to November 1945 and represents only those living at the time of publication but includes those retired from active practice.

AMERICAN BOARD OF ANESTHESIOLOGY

Ralph M. Tovell, President, Hartford, Conn.
E. A. Rovenstine, Vice President, New York.
Paul M. Wood, Secretary-Treasurer, 745 Fifth Avenue, New York.
John S. Lundy, Rochester, Minn.
Charles F. McCuskey, Los Angeles.
Henry S. Ruth, Philadelphia.
Meyer Saklad, Providence, R. I.
H. Boyd Stewart, Tulsa, Okla.
Ralph M. Waters, Madison, Wis.
T. Drysdale Buchanan, New York (Deceased)

HISTORY

The plan for this organization was devised . . . by a committee representing The American Society of Anesthetists, Inc., The American Society of Regional Anesthesia, Inc., and the Section on Surgery of The American Medical Association. These organizations adopted the tentative plans submitted, and the formation of The American Board of Anesthesiology, Inc., an affiliate of The American Board of Surgery, Inc., was completed on June 2, 1937. The Advisory Board for Medical Specialties, and the Council on Medical Education and Hospitals of the American Medical Association approved affiliation in 1938.

In 1941 the Advisory Board for Medical Specialties approved the establishment of The American Board of Anesthesiology, Inc., as a separate major board, with the unanimous consent of the participating societies and the surgical boards which are members of the Advisory Board.

Persons certified by this board (Diplomates) are designated "AB-13" in the directory and biographical departments of the American Medical Association, or "D.A.," Diplomate of The American Board of Anesthesiology, Inc.

PURPOSES

1. To establish criteria of fitness to be designated a specialist in the practice of anesthesiology.

2. To improve educational facilities and practice in medical schools and hospitals, furnish lists of these together with lists of individual instructors who give adequate instruction and training in anesthesiology.

3. To arrange, control, and conduct examinations to determine the qualifications, and grant a certificate to those who voluntarily apply and meet the required standards. Such certification will serve to provide the public and the professions with the opportunity to select the best available service (conferring of degrees is a prerogative of the universities, and the board of anesthesiology makes no attempt to grant degrees, regulate or control the practice of anesthesiology by license, or restriction).

VALUE OF CERTIFICATE

The organizations which participate in forming this board and sponsoring its activities as well as other societies or institutions, attach considerable importance to its certificate. The medical and lay public, as well as hospital directors, utilize the certification by this board in determining those who are well qualified as specialists in anesthesiology.

Although the directory of the American Medical Association indicates those practicing in the various specialties, the lists of holders of certification by specialty boards are available in the form of the Directory of Medical Specialists.

The American Board of Anesthesiology is willing to cooperate with institutions and individuals in preparing plans for instruction in anesthesiology and in offering suggestions for the organization of new departments in the specialty.

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

A. *General.*—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.

2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.

3. Practice must have been *limited* to anesthesiology for five calendar years of which at least two *must* have been devoted to special training.

4. In exceptional instances the board may, in its discretion, accept for examination, candidates who have met all the preliminary requirements, and have clearly demonstrated their identity as anesthetists over a period of years, but whose formal training does not comply with the full requirements.

B. *Professional Standing.*—1. An applicant must be a graduate of an approved medical school in the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or must be a diplomate of the National Board of Medical Examiners.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the board of anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing; and that he has received adequate training in anesthesiology.

C. *Special Training and Practice.*—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than five (5) calendar years (including period of training).

2. The board requires the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries, and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences, which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

EXAMINATIONS

The qualifying examinations will be divided into Part I, written, Part II, oral, and Part III, practical.

PART I

1. An applicant to be eligible for Part I, must meet all training requirements, and his credentials must be approved by the board.

2. Part I may be given simultaneously in several places, which the board may deem suitable for the purpose.[1]

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I.

2. It is probable that Part II examinations will be held near the time and at the place of the annual Convention of the American Medical Association. Later, however, as the demand grows, it may be necessary to establish subsidiary centers where this part may be held.[2]

PART III

1. The examiners will observe the work of the candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

CONDUCT OF EXAMINATION

Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology, and on the other hand, to prevent laxity, which would nullify the main purpose of the certification. Thus the type of examination will depend upon a careful review of the work done, years of practice, special courses of study, and professional standing, of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics, and clinical practice in relation to anesthesiology.

Oral examinations will cover topics in the above list, especially as to their clinical application.

Practical demonstrations will be required of the management of the candidate's clinical practice in his local surroundings. This may include inspection of clinical records, records of departmental activities, library facilities, available apparatus and demonstrations of application of anesthetic agents, methods and all techniques included in anesthesiology.

GRADES

A candidate must receive a passing average for each Part to be entitled to certification. No candidate shall pass a Part who does not receive a grade of 60 per cent or more in each subject of such Part. An average grade of 75 per cent shall be required for passing.

A candidate who fails in his examination in Parts I, II or III may be permitted reexamination at yearly intervals for two (2) consecutive examinations in that part without further payment of fee. The board may, however, for sufficient reasons, deny a candidate the privilege of reexamination.

Applicants who fail to exercise the examination privilege within three (3) years of the date of filing the application and of becoming eligible for examination, are required to file a new application and pay a new application fee.

FEE

The fee shall be $75 (after Jan. 1, 1948—$100). At least $25 shall be paid on filing the application (of which sum $15 will be returned if the candidate is not accepted for examination) and the remainder shall be paid before taking the examinations.

This board is a nonprofit organization. All fees are to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office, and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

REVOCATION OF CERTIFICATE

All certificates issued by the board shall be subject to revocation by the board at any time, in case it shall determine in its sole judgment that a physician who has received a certificate, either was not properly qualified to receive it or has become disqualified since its receipt.

ADDITIONAL INFORMATION

Every candidate applying for certification must personally appear before the board before being certified.

Application must be made on special blanks which may be procured from the secretary of the American Board of Anesthesiology. They must be completely and accurately filled out, accompanied by the other required credentials and filed with the secretary at least 180 days prior to the date of examination. Before filing, applicants must have completed one year of approved anesthesia residency.

The secretary cannot make any eligibility rulings. These are made only by the entire board on recommendation of the appropriate committees after reviewing the candidate's formal application. Applications cannot be considered for classification and action by these committees unless accompanied by an application fee of $25, $10 of which is not returnable.

Application blanks contain the following statement:

"I hereby make application to The American Board of Anesthesiology, Inc., for the issuance to me of a Certificate of Qualification as a specialist in anesthesiology and for examination relative thereto, all in accordance with and subject to its rules and regulations, and enclose fee of seventy-five dollars ($75).[3] I agree to disqualification from examination or from the issuance of a Certificate of Qualification or to surrender of such certificate as directed by the board, in the event that any of the statements hereinafter made by me are false or in the event that any of the rules governing such examinations are violated by me or in the event that I did not comply with or shall violate any of the provisions of the Certificate of Incorporation or Constitution and By-Laws[4] of The American Board of Anesthesiology, Inc., or both, as then constituted. I agree to hold the American Board of Anesthesiology, Inc., its members, examiners, officers and agents free from any damage or complaint by reason of any action they or any of them, may take in connection with this application, such examinations, the grade or grades given with respect to any examination, or the failure of said board or corporation to issue to me such Certificate of Qualification."

Proper forms for making application and other information may be obtained by writing to the Secretary.

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[1] Written examinations are held on the third Friday of January annually.

[2] Oral examinations are held during the third week of October annually.

[3] This may be paid as follows: $25 with application ($10 registration fee not returnable) and $50 before examination.

[4] Ignorance of the provisions of the Certificate of Incorporation and of the Constitution and By-Laws is not considered by the board to be a valid excuse for violations, as failure to maintain 100 per cent limitation of practice to anesthesiology, fee-splitting, etc.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

Francis E. Senear, President, Chicago.
J. Gardner Hopkins, Vice President, New York.
George M. Lewis, Secretary-Treasurer, 66 East 66th Street, New York.
Frank E. Cormia, Assistant Secretary, New York.
Anthony C. Cipollaro, New York.
Henry E. Michelson, Minneapolis.
Hiram E. Miller, San Francisco.
Paul A. O'Leary, Rochester, Minn.
Bedford Shelmire, Dallas, Texas.
Fred D. Weidman, Philadelphia.

ORGANIZATION

At the 1931 meeting of the American Dermatological Association, a committee was appointed to determine the advisability of forming an American board for the certification of competent practitioners in this specialty. . . . A similar committee was appointed by the Section on Dermatology and Syphilology of the American Medical Association at its meeting in the same year. A favorable report was rendered by each committee at the 1932 meetings of these organizations.

The American Dermatological Association voted to accept the report of this committee, and the president appointed the following four members to represent the Association on the newly formed American Board of Dermatology and Syphilology:

Jay F. Schamberg, Philadelphia.
Howard Fox, New York.
Harold N. Cole, Cleveland.
Arthur W. Stillians, Chicago.

The Section on Dermatology and Syphilology of the American Medical Association also accepted the report of its committee and the chairman appointed the following members to serve as its representatives:

Howard Morrow, San Francisco.
William H. Mook, St. Louis.
George M. MacKee, New York.
C. Guy Lane, Boston.

The first meeting of the board was held in New Orleans on May 11, 1932, at which time officers were elected. At another meeting held on November 11, 1932, in Philadelphia, the organization was completed and resolutions were adopted concerning the proper procedure to be followed by the board. On November 29, 1932, the board was incorporated under the laws of the State of Delaware.

In 1937 the American Academy of Dermatology and Syphilology was formed, and in November, 1939, a plan was finally approved whereby the board would be composed of three representatives from each national dermatological society, viz., the American Dermatological Association, the Section on Dermatology and Syphilology of the American Medical Association, and the American Academy of Dermatology and Syphilology.

These representatives are the *members* of the board. A physician who fulfills the requirements of the board and is awarded a certificate is known as a *diplomate*.

PURPOSES

The board has been established primarily to determine the competence of physicians who specialize in dermatology and syphilology. It will therefore establish minimum standards of education and training, examine applicants and certify properly qualified specialists in this field, prepare lists of those qualified and arrange for the publication of such lists. Because of its interest also in the fulfillment of these standards, it will attempt to stimulate the development of adequate training facilities, investigate institutions and individuals planning to train specialists, and lend its aid to the approval of those institutions and individuals offering adequate training in the specialty. The board, in addition, will always be glad to advise physicians desiring to enter this special field of medicine.

REQUIREMENTS FOR ELIGIBILITY FOR EXAMINATION

I. General Requirements

1. High ethical and professional standing.
2. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.
3. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.
4. A license to practice medicine.
5. Membership in the American Medical Association or membership in a similar society recognized as having the same purpose as the American Medical Association.
6. Citizenship in the United States or citizenship—meaning native citizens—in Canada or Cuba.

II. Special Requirements

Applicants for certification of the board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the board.

Group B consists of physicians who have completed an approved three-year period of training.

In accordance with the program recommended to the various specialty boards by the Advisory Board for Medical Specialties the following minimum requirements of special training for admission to examination have been established:

A period of study, after the internship, of not less than three years. This training may be obtained as resident, fellow or graduate student in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology. This period of specialized training shall include:

(*a*) Graduate training in the basic medical sciences which are necessary for the proper understanding and treatment of the diseases involved in this specialty.

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and materia medica and physics of physical therapy.

(*b*) Carefully supervised clinical and laboratory experience in the specialty.

(*c*) Annual examinations in the clinical, laboratory and public health aspects of dermatology and syphilology.

PRECEPTORSHIP TRAINING

Candidates may spend one year of their training in the office of a diplomate of the board, who has also been approved as a preceptor by the board. The office training may be divided over two years, in which case one-half day is spent in the office of the preceptor and the other half day in an approved institution. If no approved institution is available, only one year of training may be satisfied by working under the preceptor and two years of work in an approved institution will be necessary to fulfill the requirements. Preceptorship training may be taken during any of the years of training. Time spent with an instructor who has not been approved by the board may count only as experience and not as training.

The board assumes the responsibility of determining the standards of knowledge to be acquired, but on the candidate rests the responsibility of acquiring the knowledge to fulfill these standards.

APPLICATION AND FEE

In order that the Committee on Requirements may appraise carefully the qualifications of candidates, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. Applications should be filed early in order to obtain full advantage of the sets of histopathological slides which are available through the Army Medical Museum in Washington. The completed application blank should be sent, at least two months before the date of examination, to the secretary of the board together with the required reprints, photographs, and a *registration* fee of $25 which will not be refunded under any circumstances. No application will be considered until this fee is received. An *examination* fee of $50 is payable when the candidate is notified that his application is acceptable to the board. The fee of $75 has been carefully computed and is used entirely for administrative purposes. Examiners for the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in Group B will be required to pass a written examination. This written examination on clinical, basic science and laboratory subjects will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination.

Applicants classified in either Group A or in Group B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward where individual cases will be discussed with each candidate, as well as various subjects related to the skin such as histopathology, mycology, allergy, and physics or physical therapy. The board reserves the right to add to this list other subjects within the field of dermatology and syphilology.

A candidate for a certificate may take both the *written* and *oral* examinations at the next regular examination of the board after he has completed three full years of training in the specialty; this provision does not affect the regulations about the issuance of the certificate.

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will try especially to ascertain the breadth of his clinical experience, his knowledge of recent literature of dermatology and syphilology, and his general qualifications as a specialist in this branch of medicine.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming deficiencies in the applicant's knowledge of this specialty.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

The oral examination may be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the board.

REEXAMINATIONS

If the candidate fails or is conditioned in an examination he will be admitted to a second examination after one year, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $50 before reexamination.

A candidate who has failed twice must file a new application and pay an additional fee of $50.

CERTIFICATES

A certificate will not be issued until the candidate has completed at least five years of dermatologic training and experience. The granting of this certificate by the board indicates that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

Medical schools, hospitals, physicians, the Army, the Navy, the Public Health Service, and various governmental and philanthropic agencies, as well as the lay public, all utilize the certificate from this board as a proof of adequate preparation in the field of dermatology and syphilology and of fitness of candidates for positions under their control. For this purpose, lists of those holding certificates from the board are available for inspection and are published from time to time in the Directory of Medical Specialists. Diplomates are identified in the Directory of the American Medical Association.

A certificate granted by this board does not of itself confer or purport to confer any degree or legal qualifications, privileges, or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to improve the standards of practice of dermatology and syphilology by encouraging improvement in the opportunities for and quality of training for specialists in this field of medicine, and to certify, as specialists, those who voluntarily comply with the requirements of the board.

Certificates will be issued only to physicians in the United States and its possessions, in Canada, and in Cuba.

REVOCATION OF CERTIFICATES

The certificates issued by the board are issued subject to the provisions of the certificate of incorporation and of the by-laws, and each certificate is subject to revocation in the event that: (a) the issuance of such certificate or its receipt by the physician so certified shall have been contrary to any of the provisions of the certificate of incorporation or by-laws; or (b) the physician so certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to or could have been ascertained by the directors of the board at the time of the issuance of such certificate; or (c) the physician so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representatives; or (d) the physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Directors, moral turpitude in connection with his practice of medicine; or (e) the physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

CREDIT FOR MILITARY SERVICE

In view of the variability of dermatologic work and the differing conditions under which it was carried on by commissioned medical officers of the Army, Navy and Public Health Service, the board is unable to issue specifications for eligibility for examination to cover every situation that has arisen in the experience of every candidate, but the following general statements can be made.

1. Full credit will be given for dermatologic training in approved institutions, which preceded the military service.
2. Full time dermatologic military service may be credited, at the discretion of the board, for part or in some cases all of two years of the three required years of *training*. At least one year of the three years' required training including instruction in the fundamental subjects deemed essential for an adequate dermatologic education must be spent in one of the institutions approved for a three year training program by the board and by the Council on Medical Education and Hospitals of the American Medical Association.
3. In any event, the board strongly urges that the candidate supplement his military experiences by a further period of systematic and supervised dermatologic training before the examination.
4. A credit of one year as *experience* has already been voted by the board for one year of any military service. Thus a medical officer who passes the examination at the end of three years of training will receive his certificate one year later instead of at the completion of a total of five years' training and experience. Dermatologic work while in the armed forces not credited as training, may satisfy part or all of the remaining year of required dermatologic experience.
5. For commissioned officers the total fee will be $50 instead of $75. Of this, $25 must accompany the application. The examination fee of $25 is payable when the candidate is notified that his application has been approved by the board. These fees are not returnable.

PUBLICATIONS OF THE BOARD

1. Booklet of Information.
2. Opportunities for Graduate and Postgraduate Students in Dermatology and Syphilology, containing a list of loci where instruction may be obtained, and details about these places.
3. The names of all the diplomates are included in the third edition of the Directory of Medical Specialists published in 1946, by the A. N. Marquis Company, 210 East Ohio Street, Chicago 11, Illinois.
4. Syllabus of Graduate Training:

(*a*) To inform the student physician, intending to specialize, of the field to be covered in his preparation and the methods by which his preparation can be accomplished.

(*b*) To aid the medical schools and the dermatologic departments of medical schools and hospitals by outlining the scope of teaching deemed advisable for specialization in dermatology and syphilology.

INSTRUCTIONS TO APPLICANTS

Fill out application blank in detail.

Enclose fee of $25. (Make check payable to the American Board of Dermatology and Syphilology, Inc.)

Include *autographed* photographs as directed on application blank.

Enclose reprint of each published paper, if possible.

Send completed applications and above items to the secretary.

Please indicate under No. 13 on the application blank as complete data as possible about your training in dermatology and syphilis. Indicate the month and year, if possible, or at least the number of months of the various parts of your training and also whether full time or part time. If part time, indicate whether one-half day, six days a week, or three days a week, etc. If dispensary service is considered as part of your training, please indicate details here as well as under No. 14.

In No. 16 indicate clearly when you began to limit your practice to dermatology and syphilis.

If your training and your practice overlap, please explain under No. 19.

Further information may be obtained from the secretary.

AMERICAN BOARD OF INTERNAL MEDICINE

James J. Waring, Chairman, Denver.
Hugh J. Morgan, Secretary-Treasurer, Vanderbilt University Hospital, Nashville, Tenn.
William A. Werrell, Assistant Secretary-Treasurer, 1 West Main Street, Madison 3, Wis.
William S. McCann, Rochester, N. Y.
Marion A. Blankenhorn, Cincinnati.
LeRoy H. Briggs, San Francisco.
Alexander M. Burgess, Providence, R. I.
William B. Porter, Richmond, Va.
Burrell O. Raulston; Los Angeles.
Truman G. Schnabel, Philadelphia.
Roy W. Scott, Cleveland.
Virgil P. W. Sydenstricker, Augusta, Ga.
Cecil J. Watson, Minneapolis.

ORGANIZATION

The American Board of Internal Medicine was established in 1936 by joint action of the Section on the Practice of Medicine of the Americal Medical Association and the Board of Regents of the American College of Physicians. It is a nonprofit organization incorporated for the benefit of physicians who because of their training and experience desire to be certified formally as specialists in internal medicine by a representative group of their colleagues.

The board consists of twelve members; seven are nominated by the American College of Physicians and five by the Section on Internal Medicine (formerly the Practice of Medicine) of the American Medical Association. Each member of the board serves for a term of three years but may be nominated and elected for a second term of three years. However, no member may serve for longer than two successive terms. The service is voluntary and members of the board do not receive compensation beyond the actual expenses incurred at the oral examinations or at special meetings.

RESPONSIBILITIES

The major object of the board is to pass judgment on the competence of internists who desire certification—not to determine who shall or shall not practice internal medicine as a specialty.

The American Board of Internal Medicine is not concerned with any mechanism which gains special privileges or specific recognition for those physicians who have been certified in internal medicine. It has never been the intent of the board to define requirements for membership on the staff of hospitals.

This board endorses completely the stand of the American Board of Surgery which "specifically disclaims interest in or recognition of differential emoluments that may be based on certification."

REQUIREMENTS FOR ADMISSION TO EXAMINATION AND CERTIFICATION

Each applicant for certification by this board must satisfy the qualifications listed below under, I General Qualifications A, B, C, D and II Professional Qualifications A, B, C, D. For exceptions to the requirements see C and D under Professional Qualifications.

I. General Qualifications

A. All candidates must be citizens of the United States or Canada.

B. All candidates must present evidence of satisfactory moral and ethical standing in the medical profession.

C. All candidates must be active members in good standing in their county and state medical societies in their state of legal residence. (This ruling shall not apply to commissioned officers of the United States regular Army or Navy while serving outside the territorial limits of the United States.)

D. Canadian citizens applying for admission to examination must be active members of the Canadian Medical Association.

II. Professional Qualifications

A. Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association at the date of graduation.

B. Satisfactory completion of an approved internship of not less than twelve months.[1]

C. Approved residency or fellowship training in internal medicine according to the following plan (Plan A) or one of the alternate plans described under paragraph D below.

Plan A: A residency or fellowship in internal medicine for a period of not less than three years in a hospital or other institution approved by the Council on Medical Education and Hospitals of the American Medical Association for residency or fellowship in internal medicine. In addition, two years of practice of clinical internal medicine will be required. The board will accept the following equivalents as satisfying one year only of the three years of residency or fellowship to which this paragraph refers.

1. A second year (or a part thereof) of approved internship in a hospital approved for resident training in internal medicine if limited to the medical service (or medical specialties noted under 2) for one year and if recognized as being the equivalent of an assistant residency by the medical director of the hospital and the chief of the medical service.

2. One year of approved residency in one of the medical specialties: allergy, cardiovascular disease, gastroenterology, hematology, pulmonary diseases, neurology, pediatrics and psychiatry.

3. One year of approved residency in pathology.

4. One year as a graduate student or as an instructor in an approved medical school on a full time basis in bacteriology, biochemistry, pathology, pharmacology, physiology or internal medicine.

5. An advanced degree in the fundamental sciences.

Note: Graduate training credit for the time involved will be allowed veterans and other candidates who take and satisfactorily complete postgraduate courses in internal medicine or the basic medical sciences provided by accredited medical schools. This ruling shall not apply to courses of less than three months' or more than twelve months' duration. A certificate of creditable performance, based in part at least, on a formal examination on completion of the course, will be required.

D. *Alternate Training Plans:* The board firmly believes that the plan of intensive training prescribed above offers the best opportunity for a young physician to prepare himself to meet his responsibilities as a specialist in internal medicine. It is recognized, however, that capable individuals may accomplish the same result in a longer period of time during which the training is less intensive. The board realizes that a number of medical graduates cannot follow the shorter and more desirable plan either because suitable residencies are not available, or in some instances because of personal and economic reasons. Accordingly the board has modified its previous regulations governing eligibility for admission to examination. In doing so the board has not modified its standards of examination. It has liberalized its eligibility requirements for admission to examination by accepting half time formal training, and the practice of internal medicine under favorable circumstances as to professional and hospital contacts, in lieu of part of the full-time requirements. It is hoped that by this means exceptional individuals may acquire a knowledge of medicine and experience in its application sufficient to qualify for certification.

The program already described (Plan A), which consists of three years of formal training in an approved residency or its equivalent, following internship, and two additional years in the practice of internal medicine, is recommended by the board. Variations in this program are now made subject to the following regulations.

1. In all instances, one year of approved internship and one year of approved residency will be required, except as indicated under Plan "G." The graduate training credit of one year heretofore granted as a result of active duty as a commissioned officer in the Armed Forces during the period beginning Dec. 7, 1941, and ending Jan. 1, 1947 may not be applied in satisfaction of the one year of approved residency referred to in Plans D, E, F, unless the candidate's assignment is considered by the board to have been equivalent to an approved residency.

2. Following one year of internship and *two years* of approved residency,[2] the remaining requirements may be satisfied by:

Plan B that is, by two years of half time formal training followed by two years of practice limited to internal medicine, or by

Plan C that is, by five years of practice limited to internal medicine.

3. Following one year of internship and *one* year of approved residency, the remaining requirements may be satisfied by:

The data pertaining to the American Board of Internal Medicine represents an advance copy of the revision of the regulations of the board which was sent for publication in this issue prior to its final approval by the board. Any changes in the regulations as finally adopted will be of a minor nature.

[1] During the period in which the 9-9-9 program was in effect an approved internship of nine months will satisfy the requirements of twelve months. A residency of nine months is considered as nine months only.

[2] For the second year of approved residency one of the equivalents described under C may be substituted.

Plan D that is, by four years of half time formal training followed by two years of practice limited to internal medicine, or by

Plan E [3] that is, by two years of half time formal training followed by five years of practice limited to internal medicine, or by,

Plan F that is, by eight years of practice limited to internal medicine.

4. In every instance at least two years of practice in internal medicine must be included, but in instances in which four years of practice are substituted for one year of residency, only one additional year of practice will be required. When more than eight years of practice are substituted for two years of residency an additional year of practice will not be required.

5. Physicians who have practiced internal medicine for twelve years following an approved internship may qualify for the examinations without further training. (Plan G.)

Half time formal training under expanded plans B, D and E is defined as follows:

1. Half time as an instructor in clinical medicine in a recognized medical school in the United States or Canada.
2. Half time in a research fellowship sponsored by a recognized medical school in the United States or Canada.
3. Half time as a graduate student in an approved graduate medical school in the United States or Canada.

E. *Practice Requirements:* A period of not less than two years of practice in the general field of clinical internal medicine or in the more specialized branches of medicine. (See exceptions—paragraph 4.) This requirement may be satisfied by independent practice or in association with a recognized internist.

Note: Although in general the board believes it desirable to complete the three years of formal training before satisfying the requirements of practice a reversal of this order is acceptable.

F. *Graduates of Foreign Schools:* At the present time neither the Council on Medical Education and Hospitals of the American Medical Association nor any other educational agency in the United States has the machinery to evaluate adequately the quality of foreign medical education. This board must, therefore, evaluate the fundamental educational credentials and other qualifications of each individual candidate educated abroad who applies for admission to examination. (See requirements for graduates of foreign schools.)

G. *Candidates Graduating Prior to 1937:* The requirement of three years of graduate training will not apply to candidates graduating from approved medical schools in the United States and Canada in 1936 or previous thereto, provided such candidates have limited their work to the field of internal medicine for at least two years, and provided each candidate is recognized as an internist by his colleagues in his community.

H. *"Preceptor Training":* Preceptor type training is not recognized in satisfaction of any part of the three year requirement of formal graduate training.

I. The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy, or United States Public Health Service for one year or more, beginning on or subsequent to Dec. 7, 1941 and terminating on or before Jan. 1, 1947.

Depending upon the nature of the duty assignments, after Jan. 1, 1947 active duty as commissioned officer in the United States Army Reserve Corps, United States Naval Reserve Corps, or United States Public Health Service may be applied in satisfaction of one year of the requirements of practice but will not be regarded as satisfying any part of the graduate training requirements, unless the officer is assigned as a resident in internal medicine, neurology, psychiatry, or pathology in an Army, Navy or United States Marine Hospital which is approved by the Council on Medical Education and Hospitals of the American Medical Association for resident training in the divisions of medicine referred to.

PRINCIPLES OF TRAINING

The American Board of Internal Medicine is interested in the fact that the candidate has embarked on a career of study voluntarily and has thereby expressed the desire to excel and to participate personally in the world's progress in medicine.

Preparation must be based on years of continuous thoughtful study. Therefore, in suggesting a program for those who wish advice, the board hopes to assist the candidates to avoid inferior and superficial programs which may lead to failure and disappointment in later years.

The board believes that all internists should have a sound fundamental knowledge of anatomy, bacteriology, biochemistry, pathology, pharmacology, and physiology. Such knowledge is essential to the continued progress of any internist. The board anticipates that adequate training will be obtained in the basic sciences as applied to internal medicine during a formal three year residency program.

The board wishes to emphasize that time and training are but a means to the end of acquiring a broad knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge rests with the candidate. The responsibility of maintaining the standards of knowledge required for certification devolves on the board.

APPLICATION

Candidates for examination must make their application on a prescribed form which may be obtained from the office of the assistant secretary-treasurer.

The application must contain a record of the candidate's premedical and medical training as well as of internships, residencies, graduate study, hospital or dispensary staff appointments, teaching positions, service in the armed forces, membership in medical societies, medical papers published, and the names of three or more well known internists to whom the board may write for professional and character reference.

The application must be accompanied by one recent, signed photograph of the candidate *mounted* on the application, and the registration and examination fee of $30, which fee will cover both the written and oral examinations. An additional fee of $10 will be required when the certificate is issued.

METHOD OF EXAMINATION

The examinations for certification by the board comprise two parts: Part I is written; Part II is clinical and is an oral examination. The written examination is held simultaneously in different sections of the United States and Canada on the third Monday of February and October of each year. This examination is divided into a morning and afternoon period for each of which three hours are allowed. The questions asked are framed in such manner as the board elects; in general, there will be questions designed to test the applicant's knowledge of applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine, and his basic clinical acumen.

Candidates must pass the written examination before admission to the oral examination will be authorized. The oral examination is conducted under the direct supervision of the board. It is held near the time and place of the annual meetings of the American Medical Association and of the American College of Physicians, or at such other times and places as the board may designate. The examination is conducted at the bedside of the patient. Each candidate is assigned two or more patients and is expected to be sufficiently familiar with whatever problems present themselves as to satisfy the board of his clinical expertness.

REEXAMINATION

Effective Jan. 1, 1946, not more than three written examinations will be authorized. The interval between the first and the second written examinations will be one year. The interval between the second and third written examinations will be not less than two years. A longer period may be required by the board. A fee of $10 is required for each additional written examination.

This ruling does not make it mandatory for a candidate to repeat the examination within one or two years, since each candidate may elect a longer interval.

Not more than three oral examinations are authorized. The interval between the first and second oral examinations will be one year. The interval between the second and third oral examinations will be not less than two years. A longer period may be required by the board. Candidates may elect a longer period if desired. A fee of $10 dollars is required for each additional oral examination.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board, and shall bear the official seal of the board.

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[3] *Certification by the head of the department in which the work was done is required.*

Certificates of the board will be issued to candidates who have satisfactorily completed the written and oral examinations, and have been found qualified by the board to practice the specialty of internal medicine. Specialty certification will be designated on the certificate, for those so certified.

ADVISORY BOARDS

Allergy, cardiovascular disease, gastroenterology and pulmonary diseases are recognized specialties.

All candidates must pass the written and oral examinations in internal medicine before admission to examination in a special of medicine. The specialty examinations are oral only and may be taken the day following the examination in general medicine, or at any other regularly scheduled oral examination.

Applications for consideration in the specialties referred to must be approved by the Advisory Board concerned and confirmed by this board.

Application forms will be forwarded on request to the office of the assistant secretary-treasurer.

Please address all official correspondence to the assistant secretary-treasurer.

AMERICAN BOARD OF NEUROLOGICAL SURGERY

Howard C. Naffziger, Chairman, San Francisco.
Max M. Peet, Vice-Chairman, Ann Arbor, Mich.
William J. German, Secretary-Treasurer, 310 Cedar Street, New Haven, Conn.
A. W. Adson, Rochester, Minn.
C. C. Coleman, Richmond, Va.
W. McK. Craig, Rochester, Minn.
Leo M. Davidoff, New York.
Joseph P. Evans, Cincinnati.
Gilbert Horrax, Boston.
R. Eustace Semmes, Memphis.
W. P. Van Wagenen, Rochester, N. Y.

ORGANIZATION

The principle of certification in medical specialties is now well established. Recognizing the need for detailed training and special qualifications for the practice of neurological surgery, representatives of both the Society of Neurological Surgeons and the Harvey Cushing Society held an informal meeting on March 27, 1939, to consider this matter. Later, the group was enlarged by representatives from the Section on Nervous and Mental Diseases of the American Medical Association, the Section on Surgery of the American Medical Association, the American Neurological Association and the American College of Surgeons.

It was unanimously resolved by the enlarged group that a separate board be formed for certification in neurological surgery. Approval of the board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association was given. The American Board of Neurological Surgery was incorporated in the State of Delaware on Aug. 1, 1940.

PURPOSES

1. To encourage the study, improve the practice, elevate the standards and advance the science of neurological surgery and thereby to serve the cause of public health.

2. To grant and issue to physicians duly licensed by law, certificates or other recognition of special knowledge in neurological surgery and to suspend and revoke the same.

3. Certificates granted or issued by the corporation shall not confer or purport to confer upon any person any legal qualification, privilege or license to practice neurological surgery, nor purport to be issued under or in pursuance to or by virtue of any statutory or governmental sanction or authority. Recipients of certificates shall not by virtue thereof become members of the corporation nor shall they be entitled by virtue thereof to vote on any matter whatsoever.

4. To receive and act upon applications, from physicians duly licensed by law, for certificates and to require the payment of and to receive from each applicant therefor application, examination and other fees in such amounts as from time to time may be fixed by the Board of Directors.

5. To establish, maintain, alter and amend rules and regulations, standards and qualifications for the granting and issuing and for the suspension, surrender and revocation of certificates.

6. To determine by examination, investigation and otherwise the fitness and competence of specialists in neurological surgery who shall apply for certificates and to prepare, provide, control and conduct examinations, written, oral and otherwise, for such purpose and to determine the results of such examinations.

7. To furnish to the public, hospitals, medical schools, medical societies and practitioners of medicine and surgery lists of neurological surgeons who from time to time have been granted certificates by this corporation.

MEMBERSHIP

The membership of the corporation shall be twelve in number and shall be nominated as follows:

Four members by the Society of Neurological Surgeons
Three members by the Harvey Cushing Society
One member by the Section on Nervous and Mental Diseases of the American Medical Association
One member by the Section on Surgery of the American Medical Association
One member by the American Neurological Association
One member by the American College of Surgeons
One member by the American Academy of Neurological Surgery

All nominees shall be subject to the approval of the Board of Directors. Any vacancies shall be filled in the same manner as the selection of the original members. The board shall be empowered to fill unexpired terms of members to serve until the society which elected them can act in filling the vacancies.

The number of members and directors may be reduced to not less than five members and thereafter increased to not more than twelve members, and the allocation from the societies may be changed, on the affirmative vote of not less than two-thirds in number of the members or directors.

All future members of the board shall be diplomates of the American Board of Neurological Surgery.

The term of membership of four of the original members shall be for six years, the term of four for four years, and the term of the remaining four for two years, to be determined by lot at the first meeting of the Board of Directors. All members subsequently elected shall continue for a term of six years.

The members shall meet at least once yearly at a time and place to be fixed by the chairman on at least twenty days' written notice. Other meetings may be called by the chairman as often as may be necessary, each call to state the date and place of the meeting, and notice thereof shall be given to all of the members at least twenty days in advance.

The presence in person of a majority in number of the members of the corporation shall be necessary and sufficient to constitute a quorum for the transaction of any business at any meeting of the members, annual or special.

REQUIREMENTS FOR CERTIFICATION

Group A. *Those certified without examination.* On invitation by the board and written application made within two years from January 1, 1940, the following may be accepted as eligible for certification upon the approval of the Board of Directors and on the production of evidence of satisfactory moral and ethical standing in the profession.

1. Individuals of professorial rank in approved medical schools of the United States or Canada whose surgical practice is limited to neurological surgery.

2. Those who have specialized in neurological surgery for ten years prior to January 1, 1940.

Group B. *Those certified by examination. Eligibility for examination:* To be eligible for examination and certification by the board, all candidates must possess the preliminary and basic medical qualifications required by the Advisory Board for Medical Specialties as applied to all specialties as follows:

1. General Qualifications:

(*a*) Moral and ethical standing in the profession satisfactory to the Board of Directors.

(*b*) Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

(*c*) Those who limit their surgical activities to the practice of neurological surgery.

(*d*) It shall be discretionary with the board to accept for examination candidates who have been in practice more than six years but whose formal training fails to meet the full requirements.

(*e*) Properly qualified candidates who are permanent residents in and citizens of other countries and are legally qualified to practice medicine there, and who have received their training in neurological surgery in the United States of America or Canada may apply for certification by the American Board of Neurological Surgery.

2. Professional Standing:

(*a*) Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school which is acceptable to the American Board of Neurological Surgery, Inc.

(*b*) Completion of a surgical internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

3. Special Training:

A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the intern year, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery, Inc., for the training of neurological surgeons.

This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology, and biochemistry is emphasized. Knowledge of these sciences as applied to practice of neurological surgery will be required in the examination.

An additional period of not less than two years in the practice of neurological surgery.

APPLICATIONS

An application on the official application blank in such form as may be adopted from time to time by the Board of Directors in order to be considered at any meeting, must be in the hands of the secretary-treasurer of the board not less than six days before the date of such meeting.

The secretary-treasurer of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary-treasurer may deem desirable, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary-treasurer its recommendation whether or not the applicant is acceptable. The certification of a candidate shall be approved by a majority of the members of the entire board at any meeting held for such certification.

PLEDGE

Each candidate is required to sign the following pledge:

"I hereby make application to the American Board of Neurological Surgery, Inc., for the issuance to me of a Certificate of Qualification as a specialist in neurological surgery and for examination relative thereto, all in accordance with and subject to its rules and regulations. Upon the issuance of the certificate I agree to and do become bound by the By-Laws of the American Board of Neurological Surgery, Inc., insofar as applicable.

"I agree to disqualification from examination or from the issuance of a Certificate of Qualification or to forfeiture and redelivery of such Certificate of Qualification in the event that any of the rules governing such examination are violated by me or for any one of the reasons set forth in the By-Laws. I agree to hold said American Board of Neurological Surgery, Inc., its members, examiners, officers and agents free from any damage or claim for damage or complaint by reason of any action they, or any of them, may take in connection with this application, such examination, the grade or grades given with respect to any examination and/or the failure of said Corporation to issue to me such Certificate of Qualification."

PAYMENT OF FEES

The fee for certification, with or without examination, shall be seventy-five dollars ($75).

The candidate for examination on filing his application shall accompany it with an application fee of twenty-five dollars ($25). When notified by the secretary-treasurer that he is eligible for examination he shall send the examination fee of fifty dollars ($50) to the secretary-treasurer at least two weeks before the date of the examination. The application fee will be returned if the candidate is not accepted for examination.

REEXAMINATION

A candidate who has failed in one examination is eligible to reexamination in the subject, or subjects, in which he failed, within three years, on payment of a reexamination fee of ten dollars ($10). A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but has failed a second time will be considered a new applicant.

FORM AND EXECUTION

Certificates issued by the corporation shall be to the effect that the holder has been found qualified to practice neurological surgery. They shall be in such form, in compliance with the Certificate of Incorporation, as the Board of Directors shall approve and shall be signed by the Chairman or the Vice-Chairman and by the Secretary-Treasurer and shall have impressed thereon the official seal of the corporation.

REVOCATION OF CERTIFICATES

Any certificate issued by the board shall be subject to revocation at any time the board shall determine in its sole discretion that the candidate to whom the certificate was issued either was not properly qualified to receive it, or has since become disqualified.

Further information may be obtained from the secretary-treasurer.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

Walter T. Dannreuther, President, New York.
Joseph L. Baer, Vice President, Chicago.
Ludwig A. Emge, Vice President, San Francisco.
Paul Titus, Secretary-Treasurer, 1015 Highland Building, Pittsburgh 6.
Norman F. Miller, Ann Arbor, Mich.
Edward A. Schumann, Philadelphia.
Willard R. Cooke, Galveston, Texas.
F. Bayard Carter, Durham, North Carolina.
Robert L. Faulkner, Cleveland.

ORGANIZATION

In 1930 the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, the American Gynecological Society, and the Section on Obstetrics and Gynecology of the American Medical Association, each elected three Fellows to constitute the American Board of Obstetrics and Gynecology.

Dr. Walter T. Dannreuther of New York, Dr. Paul Titus of Pittsburgh and Dr. Grandison D. Royston of St. Louis were appointed to represent the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons; Dr. Jennings C. Litzenberg of Minneapolis, Dr. Joseph L. Baer of Chicago, and Dr. E. A. Schumann of Philadelphia were appointed to represent the American Gynecological Society; Dr. Fred L. Adair of Chicago, Dr. R. D. Mussey of Rochester, Minn., and Dr. E. D. Plass of Iowa City were appointed to represent the Section on Obstetrics and Gynecology, and Abdominal Surgery of the American Medical Association. Since formation of the board several of the original members have resigned and others have been duly appointed to fill their places.

The board was incorporated and organized and held its first meeting in September 1930. At that time the By-Laws were adopted and provision was made by resolutions for its proper functioning.

This board had been in the process of organization since 1927 and put into action a determined effort on the part of these three national organizations to improve the standards of practice of obstetrics and gynecology.

PURPOSES

First. To elevate the standards and advance the cause of obstetrics and gynecology.

Second. To determine the competence of practitioners professing to be specialists in obstetrics and gynecology.

Third. To arrange, control and conduct examinations to test the qualifications of voluntary candidates appearing before the board for certification as specialists in obstetrics and gynecology.

Fourth. To grant and issue certificates of qualification as specialists in the field of obstetrics and gynecology to candidates successful in demonstrating their proficiency.

Fifth. To serve the public, hospitals and the medical schools by preparing lists of specialists certified by the board.

These activities proceed from the certificate of incorporation in which it is stated that "the nature of the business and the objects or purposes proposed to be transacted, promoted and carried on by it" are as follows:

"To encourage the study, improve the practice, and advance the cause of obstetrics and gynecology, subjects which should be inseparably interwoven; and to grant and to issue to physicians duly licensed by law, certificates or other equivalent recognition of special knowledge in obstetrics and gynecology."

VALUE OF CERTIFICATE

The national obstetrical and gynecological organizations, which have participated in the formation of the board and are sponsoring its activities, as well as other societies, attach considerable importance to its certificate. Both the medical and the lay public, including hospital directors, have come to utilize the certificate from this board freely as a means of determining who are well grounded as specialists in obstetrics and gynecology.

Lists of those holding certificates from this board who are limiting their practice to obstetrics and gynecology are published in the Directory of Medical Specialists; similar lists are published by the *American Journal of Obstetrics and Gynecology*, and also appear in the *American Medical Directory*. This latter indicates diplomates of this and other boards by means of numerical symbols appearing in the biographic records but does not give such special recognition to diplomates who are not members of the American Medical Association.

Each certificate granted or issued does not of itself confer or purport to confer upon any person any degree or legal qualifications, privileges or license to practice obstetrics or gynecology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician. Its chief aim is to standardize qualification for specialists in obstetrics and gynecology, and to certify as specialists those who voluntarily appear before the board for such recognition and certification, according to its regulations and requirements.

It was never intended by this board that certification should be required by any hospital as a prerequisite to appointment in various staff positions, even though certification or its full equivalent is considered a desirable requisite to appointment in key positions, as on the Senior or Chief Staff, especially of hospitals expecting to conduct approved services for training of residents.

This board does not subscribe to any hospital or medical school rule that certification is to be required for medical appointments in ranks lower than Chief or Senior Staff of hospitals, or Associate Professorship in schools of medicine, for the obvious reason that such appointments constitute desirable specialist training.

REVOCATION OF CERTIFICATES

Each Certificate of Qualification may be revoked by this board in the event that:

1. Any representation or statement made to the board or to any of its representatives by the physician so certified, including the statements contained in his application for certification, shall have been false or intentionally misleading.

2. The physician so certified shall not *in fact* have been eligible to receive certification, irrespective of whether or not the facts constituting such ineligibility were known to or could have been ascertained by this board, its members, directors, examiners, officers, or agents at or before the time of issuance of such Certificate of Qualification.

3. Any rule governing examination for certification shall have been violated by the physician so certified and the fact of such violation shall not have been ascertained until after the issuance of the Certificate of Qualification.

4. The physician so certified shall fail to abide by the regulations governing the limitation of his practice to the specialty of obstetrics and gynecology.

5. The physician so certified shall violate the standards of ethical practice of medicine then accepted by organized medicine in the locality in which he shall be practicing and, without limitation of the foregoing, the forfeiture, revocation or suspension of his license to practice medicine, or the expulsion from, or suspension from the rights and privileges of membership in, the American Medical Association or any state or county society affiliated therewith, any recognized Canadian medical society, the American Association of Obstetricians and Gynecologists and Abdominal Surgeons or the American Gynecological Society shall be conclusive evidence of a violation of such standards of ethical practice of medicine.

6. The physician so certified shall fail to comply with or violate, or the issuance or receipt by him of such Certificate of Qualification shall have been contrary to or in violation of, the Certificate of Incorporation, the By-Laws or the Rules and Regulations of this board.

Upon revocation of any Certificate of Qualification by this board as aforesaid, the holder thereof shall return his Certificate of Qualification and all other evidence of certification to the secretary of the board and his name shall be removed from the list of certificate holders of this board.

PREREQUISITES TO ELIGIBILITY

Each applicant before he shall become eligible to receive such certificate or other evidence of recognition:

1. Must have had conferred on him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

2. Must establish in a manner satisfactory to the board of directors that he is a physician duly licensed to practice medicine, and

a. That he is of high ethical and professional standing.

b. That he has received adequate training in both obstetrics and gynecology as a specialty. Training in one branch only is not acceptable.

3. Must make application for investigation of his credentials and a survey of his character.

4. Must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, except for military duties, having limited for at least six (6) months before making application (except for active military duty).

5. Must have membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. (Membership in the American Medical Association or equivalent society membership is waived, temporarily, for men in the Army or Navy, especially for those who proceeded directly or almost so from hospital services into Army or Navy Services, on a statement of intention to join promptly upon return to civilian practice.)

6. This board will not accept applicants for examination who are not full citizens of the United States or of Canada, though they be residents of either country. Foreign born applicants must have been certified by either the National Board of Medical Examiners or licensed to practice medicine in the United States or Canada by a state or provincial board of licensure. Notarized statements, *not* original citizenship papers, must be furnished when the application is filed, attesting to the fact of full citizenship in the United States or Canada, if the applicant is foreign born. Further there will be required a probationary period of at least three (3) years from the date of licensure in the practice of medicine in these countries before such a candidate may be admitted to examination.

7. The board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation. As a substitute for special training, service with a qualified obstetrician-gynecologist preceptor, preferably one who has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case must be reviewed and decided individually by the Credentials Committee after the application is submitted in the regular manner. The time allowance for this type of training will vary with the amount of work done with the preceptor. Opportunity for personal responsibility during this period of training is essential.

8. The board conformed with the general acceleration in programs in medical education in that it will accept a period of nine "accelerated" months as an academic year in satisfying the requirement for each of three years of residency training. Such allowances can be made only for services during the wartime period of the official "accelerated program" and are not made for services before 1944 or after the discontinuance of this acceleration in 1946.

9. The period of special training should emphasize the relation of the basic sciences, anatomy, pathology, physiology, biochemistry, and bacteriology, to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects, viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis, and alkalosis, narcotics and hypnotics, wound healing, etc.

10. Credit for graduate courses in the basic sciences which involve laboratory and didactic teaching rather than clinical experience or opportunities will be given credit for the time spent up to a maximum period of not more than six months regardless of the duration of the course.

11. An acceptable residency is one which has been approved by the Council on Medical Education and Hospitals of the American Medical Association jointly with this board.

12. The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology, except by special ruling when this is related to active military duty.

13. This board deprecates engagement in fields of practice other than that in which candidates profess to be specialists. The board does not exclude from examination, however, obstetricians and/or gynecologists who practice abdominal

surgery and urology in the female, as well as breast surgery, because of the correlation of these activities.

Military service or any other similar patriotic service, such as work with Selective Service Boards, etc., have not been construed as nonlimitation of practice in violation of the board regulations.

REQUIREMENTS

The requirements for all candidates will be uniform, as follows:

1. Completion of at least one (1) year intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association. (This need not be a general rotating internship, although this latter is preferred.)

(A second year general internship is to be considered as one of a candidate's years of practice. No credit will be given toward special training during a second year general internship.)

2. A minimum of seven (7) years of practice after the intern year, including at least three (3) years of residency training in approved institutions, or adequate preceptorship training as a formal assistant, preferably full time, in approved institutions or with recognized specialists in obstetrics and/or gynecology satisfactory to the Board of Directors.

This board, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association, surveys institutions providing acceptable residencies in obstetrics and gynecology.

The American Board of Obstetrics and Gynecology establishes herewith requirements for its approval of a residency in a hospital department or service:

1. The chief of the Active Visiting Staff of the Department must be certified by this board with at least one other of his subordinates, the remaining members of the Staff must be otherwise acceptably qualified to teach and to practice obstetrics-gynecology.

2. In instances where the services of obstetrics-gynecology are not combined but are separate in any given hospital, the chief of each such service and at least one of his subordinates must be certified.

3. If obstetrics and gynecology are not combined in one department, approval can be granted only if arrangements are made for some degree of rotation of residents between both services.

4. If gynecology is classified in the given hospital as a subdivision or subservice of surgery, approval cannot be granted for residency training in gynecology.

5. Exceptions to the foregoing, in respect to the certified status of chiefs of service and others as outlined above, can be made only by unanimous assent of the Committee on Postgraduate Survey, for adequate and justifiable reasons. As examples of the latter, the degree of F.A.C.S. in obstetrics-gynecology might be accepted in lieu of one of the two required certifications if the general reputation of the person concerned is known to the committee as national or sectional in scope, or a professorial rank without certification might be acceptable.

6. It should be recalled by all concerned that credits for graduate training may be obtainable for residency or assistantship service in hospitals not officially approved for residency training. Each such case must be individually considered, and credits will be largely dependent on the teaching qualifications of those in charge of the service, and the clinical facilities of the hospital in question.

Lists of formally approved institutions for special residency training appear regularly in certain issues of the Journal of the American Medical Association. Detailed information about any of these can be obtained by applying to the American Medical Association.

It is possible for candidates trained in some unclassified or as yet unapproved hospitals to obtain credit for this training if properly supervised. Each such case must be considered on its own merits.

Candidates should offer as sponsors or references, two Diplomates of this board with whom they are presently in contact, rather than men under whom they served as residents only.

APPLICATION AND FEES

Application must be made on a special blank which will be furnished by the secretary's office, 1015 Highland Building, Pittsburgh 6, Pa., and must be forwarded with the other required credentials and the application fee to the secretary's office at least ninety (90) days prior to the scheduled date of the examinations.

Application fee.......................................$15.00

Make checks payable to American Board of Obstetrics and Gynecology. Not returnable.

(Applications will not be considered for classification and action by the Credentials Committee unless accompanied by the application fee.)

Examination fee.......................................$85.00

(Payable when the candidate is notified of acceptance for examination. Not returnable after the candidate has been officially accepted by the Credentials Committee and notified to report for examination.)

Total fee.......................................$100.00

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

Many prospective candidates write the secretary's office outlining in their letters their training qualifications and asking informally if they are eligible. Any candidate should be able to make a fair estimate of his eligibility after studying this bulletin.

The secretary cannot and will not make any eligibility rulings. These are made only by the Credentials Committee after reviewing those applications only, which are made on the special form provided for this purpose, and submitted to the secretary with the candidate's application fee.

All candidates must comply with board regulations in effect for the year in which the examination is taken, regardless of when the original application was filed.

Applicants declared ineligible for admission to examination may reopen their applications within two (2) years of the filing date without payment of an additional application fee.

Applicants declared eligible but who fail to exercise the examination privilege within three (3) years of the date of filing the application are required to file a new application and to pay a new application fee.

An applicant in military service during the wartime national emergency and assigned to work in general surgery under conditions acceptable to the Credentials Committee may receive credit up to a maximum of six (6) months applicable toward his three (3) required years of specialty training. The additional time may be applied toward the years of practice requirement.

An applicant serving under military orders in an Army or a Navy hospital in an obstetrical and/or gynecological service under supervision will be given the same credit as if he were working under a preceptor, since most of these departments are supervised by men who are Diplomates of this board or who are recognized obstetrician-gynecologists. He may obtain full residency credit if such hospital is officially approved and listed for residency training in this specialty.

Additional time in military service with any type of general medical assignment may be applied toward the board's year of practice requirement. The Credentials Committee of the board will review and give consideration to each individual case.

Upon notice of acceptance for admission to examination, examination fee is due and also case records which should be shipped by the candidate to the secretary's office as soon as possible and not later than the date of the Part I written examination.

The candidate should make immediate acknowledgment of his notice of acceptance at which time he will notify the secretary's office approximately when to expect his case reports.

EXAMINATIONS

Part I examinations are scheduled annually for the first Friday in February. Grades cannot usually be mailed from the secretary's office until after April first following the examination. Arrangements will be made for candidates to report in any convenient city where there may be a Diplomate of this board to conduct or to supervise the written examination which will be sent out from the board's office under sealed cover.

Special arrangement will be made through senior officers for conducting the written portion of the Part I examination for men in military service. Such candidates are requested to keep the secretary's office informed at all times of changes in their mailing addresses.

All applicants accepted for examination will be required to obtain a passing grade in both the written examination and a review of case reports (Part I), before becoming eligible for the oral-clinical and pathology examinations (Part II).

The passing grade for the written examination and case reports is 75 per cent. A candidate whose grade in either or both falls below 75 per cent is conditioned.

Reexamination for the removal of conditions in Part I may be taken after one year but within three years after the first failure, without payment of an additional fee.

Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year.

Candidates appearing for reexamination under a new application after two previous failures will not be required, if they have passed all or part of the Part I examinations on their first application, to repeat such examination items already successfully cleared.

After two ineligibility or postponement rulings on any candidate's application, an entirely new application form must be submitted (with or without fee, according to current requirements) in order to bring data down to date. The essential feature of this should be evidence of additional training and experience.

All original Group A candidates, who have allowed three years or more to elapse without taking examinations, and who care to apply again, must do so on the regular current basis. If accepted, they will now be subject to Part I and Part II examinations.

Former Group A candidates appearing for reexamination after first failure in Part II are not required to take the Part I examination.

Part I

Examination consists of:

1. A comprehensive written examination, conducted annually, including questions on both obstetrics and gynecology and related basic sciences.
2. The filing of twenty-five (25) obstetrical and gynecological case reports, in condensed form. Five (5) cases may concern major illnesses, not necessarily operative. These must be cases for which the candidate was personally responsible.
3. The written examination will be limited to a maximum period of three hours.

Part II

The oral-clinical and pathology examinations given all candidates are conducted by the entire board and the associate examiners usually near the time and place of the annual meeting of one or more of the national societies represented on this board, usually that of the American Medical Association. Advance announcements of examination dates and place will be made in medical journals throughout the country.

Examination consists of:

1. Oral examination before two to four examiners.

   An endeavor is made to adapt the details of the oral examination to each candidate's experience and practice. The examination is particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the related basic sciences, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

2. Pathology examination.

   The candidate is expected to identify and to discuss several obstetrical and gynecological pathologic specimens and sections.

Examiners report orally on each candidate to the assembled board, after which the results of their investigations are considered jointly by the entire board and associate examiners. After a general consideration of the details of the candidates oral and pathology examinations, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board.

The final action of the board is based upon the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examination.

No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I, but to take a reexamination in the oral-clinical and pathology portions only. One reexamination may be taken within three (3) years of the original examination or first failure without reapplication or payment of an additional fee.

The candidate may reappear at the examination following the one failed by him. In applying for reappearance he should outline additional training or experience acquired in the interim. The board may, at its discretion, deny the candidate the privilege of reexamination.

Failure to exercise the privilege of reexamination within three (3) years, entails the filing of a new application with the usual application and examination fees.

After two failures in either Part I or Part II on the first application, the candidate may reapply and be readmitted to examinations once only. Exceptions to this ruling can be made only by action of the entire board in annual session, usually to be based upon evidence of additional training and experience sufficient to warrant such action.

CASE REPORTS

Case reports are to be sent by the candidate to the secretary as soon as possible after receiving notification of eligibility, and not later than the date of the Part I written examination.

Twenty-five (25) important obstetrical and gynecological case reports, in condensed form, are required. Five (5) cases may concern major illnesses, not necessarily operative. These reports must include a variety of material rather than a number of cases of one type and must be cases treated within four (4) years of the date of the candidate's application. The number of cases from one's residency service should not be more than half the total number.

These reports are not to be copied verbatim from hospital records, but must be sufficiently complete so that the examiners can evaluate the judgment of the candidate in his choice of procedure.

Candidate should indicate on each case record whether this is from his residency service or from his private practice and all records failing to have this information will be considered unacceptable.

These reports should be prepared in condensed form in line with the following items:

1. Heading each separate case report must be the hospital number and date, name of the hospital at which the patient was operated on, with all pertinent dates, together with the candidate's name or identifiable initials, name of each patient, name of operator (candidate). The case reports should be given sequence numbers from 1 to 25 and must specify whether from residency service or from private practice.
2. (*a*) Preoperative diagnosis and basis for this, in brief.
   (*b*) Postoperative diagnosis, based on findings.
3. Nature of operation, omitting descriptive technical details, but including pathologist's findings on tissue removed.
4. Critical summary or analysis of each case, with critical deductions derived from correctness or incorrectness of diagnosis, operative findings, postoperative course, and from final results on discharge from hospital and at six months "follow-up" examination.
5. Histories must be typewritten on standard size paper, 8½ x 11 inches, and must be assembled by individual cases.
6. Reports must not be bound with any form of binding other than light weight paper folders or covers.
7. Two (2) separate verified index lists of case reports must be made for each individual hospital at which operations were performed. All verifications must be formally signed by the responsible hospital official, attesting in each instance that the candidate was the operator and must state:

   Sequence numbers of case reports.
   Candidate's name at head of each page.
   Name and address of hospital.
   Whether from residency service or from private practice.
   Patients' names or identifiable initials.
   Patients' admission numbers.
   Date of each patient's admission.
   Date of each patient's operation.
   Date of each patient's discharge.

The critical summary or analysis which must be prepared for each case must include:

1. An account of the candidate's personal observations of the case both prior to and subsequent to operation.
2. The basis for the diagnosis.
3. The facts that determined the course of treatment. Details of operative technic should not be included.
4. Critical conclusions to be drawn from the outcome of the case.

Case reports which do not include such discussion and comments will not be reviewed or graded by the examiners.

Obstetrical case reports should show:

(*a*) Date of first prenatal visit and any special features bearing on the case.

(*b*) The weight and condition of the child at birth and at time of discharge from the hospital.

Obstetrical reports which do not include pelvic measurements either by calipers and, as indicated, by x-ray pelvimetry, will be considered incomplete.

For lists of certificate holders, of this, as other boards, consult the Directory of Medical Specialists (1946).

Make checks payable to the American Board of Obstetrics and Gynecology.

Communications should be addressed to the secretary.

AMERICAN BOARD OF OPHTHALMOLOGY

Everett L. Goar, Chairman, Houston, Texas.
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Algernon B. Reese, New York.
Phillips Thygeson, San Jose, Calif.
Derrick T. Vail, Chicago.

ORIGIN, AIMS AND METHODS

In 1913 the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Otolaryngology appointed committees to report on ophthalmic education.

In 1914 these committees recommended that medical schools of the first class establish graduate courses in ophthalmology leading to an appropriate degree, and that these courses should represent not less than two years of systematic work subsequent to taking the degree of Doctor of Medicine. There was unanimous agreement as to the need of systematized and standardized training of those who are to practice ophthalmology, but it was clear that, in the near future, the number who would take the complete course leading to such a degree would be small. Moreover, such a course would not solve the problem of differentiating, in some degree, between the competent and the incompetent among those now in practice of ophthalmology. The committees were continued and, in 1915, they made further recommendations, as a result of which a joint board was created consisting of three representatives from each of the three special societies.

In 1916, after much preliminary work, this board was organized as the American Board for Ophthalmic Examinations (later changed to "American Board of Ophthalmology"). It was incorporated May 3, 1917.

In 1934 the plan of organization was changed so that each component society elects four members, instead of three, to form the board. The members of this board are chosen in the same manner in which the presiding officers of these societies are selected. One is elected each year by each of the societies which are represented on the board, to serve for a four-year term.

As other specialties formed boards similar to the American Board of Ophthalmology the need for some supervising and coordinating control led to action by the American Medical Association in 1933 authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration, based on those of the American Board of Ophthalmology, of Otolaryngology, of Obstetrics and Gynecology, and of Dermatology and Syphilology; and (2) to recognize officially new boards meeting these standards.

The Constitution of the Advisory Board for Medical Specialties which was organized in 1934 states that: "This Board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists."

The Advisory Board adopted June 10, 1934, a list of essentials for approved special examining boards. It is practically identical with the outline of essentials for approved specialty boards adopted June 10, 1934 by the Council on Medical Education and Hospitals and ratified June 11, 1934, by the House of Delegates of the American Medical Association.

PURPOSES OF THE BOARD

1. To elevate the standards of ophthalmology.
2. To determine the competence of practitioners professing to be specialists in ophthalmology.
3. To arrange and conduct examinations to test the qualifications of candidates who appear before the board for certification as specialists in ophthalmology.
4. To grant and issue certificates of qualification as specialists in the field of ophthalmology to candidates successful in demonstrating their proficiency.
5. To act as advisers to prospective students of ophthalmology.
6. To serve the public, hospitals and medical schools by preparing lists of specialists certificated by the board.

NO DEGREES OR LEGAL RESTRICTIONS

Each certificate granted or issued does not of itself confer or purport to confer on any person any degree or legal qualifications, privileges or license to practice ophthalmology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician. Its chief aim is to elevate the standards of qualification for specialists in ophthalmology and to certify as specialists Doctors of Medicine who appear before the board for such recognition and certification, according to its requirements and regulations.

VALUE OF CERTIFICATE

Up to January 1, 1947, eighty-six examinations have been conducted and 2564 ophthalmologists have received the certificate of the board.

The American College of Surgeons recognized the certificate of this board as evidence of academic fitness in ophthalmology. Diplomates of this board applying for membership in the American College of Surgeons may be exempted from presenting case reports or be required to present half the customary number.

Many special eye hospitals as well as general hospitals in all parts of the country require the certificate for appointment or promotion on their staffs. In addition, many societies now require the certificate as a prerequisite for membership. The number of institutions and societies which require the certificate of the board is increasing.

Lists of those holding certificates from this board are published in the Directory of Medical Specialists; similar lists also appear in the American Medical Directory. This latter indicates diplomates of this and other boards by means of numerical symbols appearing in the biographic records, but does not give such special recognition to diplomates who are not members of the American Medical Association.

REQUIREMENTS

All candidates must comply with current board regulations regardless of time of filing application.

The secretary is not permitted to make decisions as to requirements. These rulings are made only by the Committee on Credentials after reviewing the candidate's formal application.

PREREQUISITES

1. High ethical and professional standing.
2. Full citizenship in the country where the candidate practices. (Limited to countries of North and South America, their possessions and territories.)
3. A degree from a medical school of high standing, satisfactory to the board and approved by the Council on Medical Education and Hospitals of the American Medical Association. An applicant whose training has been received outside of the United States and Canada, must present credentials satisfactory to the board and is required to have the certificate of the National Board of Medical Examiners if he has been in practice less than ten years.
4. Completion of an internship of not less than one year in a hospital approved by the same Council.
5. Not less than thirty-six months (a total of sixty months is required of candidates practicing both ophthalmology and otolaryngology) of combined study, training and practice of ophthalmology in approved medical schools, hospitals, clinics, dispensaries, laboratories, preceptorships and private practice.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application forms must be filled out completely and accurately. Letters of endorsement, together with any other required credentials, must be sent to the secretary's office before the deadline date.
2. Fee of $100 remitted with application.
3. A list of papers or books published.
4. Preliminary conference.
5. Practical examination.
6. Special review of ophthalmic surgery.
7. Membership in the American Medical Association, or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association.

FEES

For preliminary conference and original examination, $100 (as mentioned above).

For reexamination in all subjects, $75.

For reexamination in one or more subjects, $35.

Examination must be taken within three years of date of application. Thereafter new application and fee are required.

The fees have been carefully computed on a basis of cost of examinations, and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

SPECIAL TRAINING

(Applicable so far as practicable after 1947)

This shall include:

1. Graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology, pharmacology, disorders of ocular motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope. Mere factual knowledge is not sufficient; the candidate must have had training in the application of these subjects and in their use in clinical ophthalmology, especially in refraction.

2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for the intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board.

These requirements may be met in various ways:

BASIC STUDIES

1. Histology, pathology, bacteriology, immunology.
2. Anatomy and embryology.
3. Perimetry.
4. Therapeutics and operations.
5. Optics and visual physiology.
6. Relation of the eye to general diseases.

These may be covered by:

A. *Graduate Study.*—By a curricular course in the basic sciences related to ophthalmology in an approved graduate medical school.

B. *Postgraduate Study.*—By courses in individual basic sciences related to ophthalmology as given at various approved institutions. The Home Study Course of the American Academy of Ophthalmology and Otolaryngology available to residents is recommended.

C. *Residency.*—By advanced study of these subjects during a residency and by correlation of the principles involved with clinical problems.

D. *Research, Fundamental and Clinical.*—By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic sciences into direct relation with the concrete clinical problem.

CLINICAL EXPERIENCE

A. By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the entire field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B. By residencies in hospitals where regular instruction by lectures and quizzes and seminars is not available. The syllabus issued by the board will guide the resident in his selection of topics to be studied.

C. By fellowships in ophthalmology.

D. By preceptorship with a well-trained and critical ophthalmologist.

E. After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F. Research under competent critical and sympathetic supervision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate basic facts in the intelligent critical way which is expected of the specialist in practice.

G. The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he used his opportunities than on the opportunities themselves.

PRELIMINARY CONFERENCE

Preceding each examination the candidates are required to present themselves before members of the board to demonstrate their fitness for examination. Their training and experience will be reviewed together with their understanding of the basic sciences related to ophthalmology. Those who are found acceptable will then be notified to appear immediately following the conference for a practical and clinical examination in ophthalmology.

EXAMINATIONS

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the board, depending on the number of applications from any region.

The board reserves the right to limit the number of candidates to be admitted to any one examination.

Candidates must be examined in all subjects covered by the Syllabus of the board. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

PRACTICAL AND CLINICAL EXAMINATION

The subjects of the practical examination are as follows: External Diseases, Ophthalmoscopy, Histopathology, Refraction, Motility, Ophthalmic Surgery, Perimetry.

1. *External Diseases of the Eye and Adnexa.*—Various methods of examination, diagnosis and treatment.

2. *Ophthalmoscopy.*—Patient will be examined by the candidate and the findings described or drawn. A candidate is required to bring his own ophthalmoscope.

3. *Pathology.*—The candidate will demonstrate familiarity with general clinical pathology as well as the etiology, pathology and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize normal and pathologic histology of the eye.

4. *Refraction.*—A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.

5. *Motility.*—The candidate will demonstrate on patients his familiarity with routine methods of examination and diagnosis.

6. *Ophthalmic Surgery.*—A candidate will demonstrate his surgical technic on animal eyes. He must bring his own equipment for performing an extra-capsular combined extraction of the lens.

Special Review of Surgical Cases. The board now requires of all candidates a list of ophthalmic operations performed within two years prior to examination. This list is to be presented with application.

The operations should be listed in groups of each type of surgery. The numbers of operations in each group must be totaled and the total number of all operations shown. The list must contain the following data:

(*a*) Date.

(*b*) Condition or conditions for which operation was performed.

(*c*) Name and character of operation.

(*d*) Identification by hospital or clinic number, or the name of a consultant or confrere who was present at the time of operation.

Circumstances which prevent any candidate from fulfilling this requirement should be fully explained, with detailed statement of candidate's surgical experience.

CERTIFICATION

The decision of the board is final as to the candidate's passing, failure or partial failure. The final action of the board is based upon the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examinations.

Certified ophthalmologists should refer to themselves as DIPLOMATES of the American Board of Ophthalmology. (There are only twelve *members* of the board and these are elected from the three component societies.)

REEXAMINATION

Candidates may be reexamined as often as they desire on satisfactory evidence of adequate additional preparation and payment of reexamination fee. A minimum of one year must elapse between examinations when a candidate is conditioned in one or more subjects. A minimum of two years additional preparation is required of candidates who fail in all subjects. The board may, at its discretion, deny the candidate the privilege of reexamination.

REVOCATION OF CERTIFICATES

Each Certificate of Qualification may be revoked by this board in the event that:

1. Any representation or statement made to the board or to any of its representatives by the physician so certified, including the statements contained in his application for certification, shall have been false or intentionally misleading;

2. The physician so certified shall not in fact have been eligible to receive certification, irrespective of whether or not the facts constituting such ineligibility were known to or could have been ascertained by this board, its members, directors,

examiners, officers or agents at or before the time of issuance of such Certificate of Qualification;

3. Any rule governing examination for certification shall have been violated by the physician so certified and the fact of such violation shall not have been ascertained until after the issuance of the Certificate of Qualification;

4. The physician so certified shall violate the standards of ethical practice of medicine then accepted by organized medicine in the locality in which he shall be practicing; the forfeiture, revocation of suspension of his license to practice medicine; the expulsion from, or suspension from the rights and privileges of membership in any recognized medical society;

5. The physician so certified shall fail to comply with or violate, or if the issuance or receipt by him of such Certificate of Qualification shall have been contrary to or in violation of, the Certificate of Incorporation, the By-Laws or the Rules and Regulations of this board.

The American Board of Ophthalmology considers it unethical for physicians to divide fees, to pay commissions to any persons referring cases to them, and to accept commissions or rebates from any opticians, druggists, or makers of appliances in any way connected with the medical care of the patient.

Upon revocation of any Certificate of Qualification by this board as aforesaid, the holder thereof shall return his Certificate of Qualification and all other evidence of certification to the secretary of the board and his name shall be removed from the list of diplomates or Certificate holders of this board.

For complete lists of diplomates consult the Directory of Medical Specialists published by the A. N. Marquis Company, 210 E. Ohio Street, Chicago 11, Illinois.

Address all communications to the Secretary-Treasurer.

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INTRODUCTION

The tendency of an increasing number of physicians to limit heir practice to a special branch of medicine has made it essential that the various recognized specialties organize qualifying boards to certify applicants who prove themselves competent. Recognizing this need, three major orthopaedic groups, viz., The American Orthopaedic Association, The Section on Orthopaedic Surgery of the American Medical Association, and the American Academy of Orthopaedic Surgeons, united in organizing a certifying board. This board was ncorporated in the year 1934 as The American Board of Orthopaedic Surgery, Inc., and is officially approved by the Advisory Board of Medical Specialties and by the Council on Medical Education and Hospitals of The American Medical Association.

It is the purpose of the board to raise the qualifications and standards for the practice of orthopaedic surgery and to certify those surgeons who voluntarily comply with its requirements.

WHAT THE BOARD WILL ACCOMPLISH

1. Certification by the board will form a criterion by which interested lay and professional groups may judge the qualifications of an orthopaedic surgeon and will be a reliable guide in the choice of consultants.

2. Qualification of applicants for certification by the board indirectly results in improved teaching of orthopaedic surgery in medical schools and better care of patients on orthopaedic services of hospitals that have approved resident training programs.

Excerpts from Articles 1, 2, 7, 8, 9, 10, 11 and 12 of the By-Laws:

Article 1. *Section 1.* Definition. Orthopaedic surgery is that branch of surgery especially concerned with the preservation and restoration of the functions of the skeletal system, its articulations and associated structures.

Article 2. *Section 2.* Purposes. To test and determine the qualifications of applicants for examination and to issue certificates to those found qualified.

Section 3. To prepare and maintain a registry of the holders of the certificates issued by the board.

Section 4. To serve the public, physicians, hospitals and medical schools by furnishing lists of those who have received the certificate of the board, and thus to assist in protecting the public against irresponsible and unqualified practitioners who profess to specialize in orthopaedic surgery.

Article 7. Qualification of Candidates. There are certain general qualifications applicable to all candidates for examination Part I and Part II. In addition, candidates must have had special training in orthopaedic surgery on one of the approved plans hereinafter described:

Section 1. General Qualifications:

(a) He must be a citizen of the United States or Canada.

(b) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States or Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners; he must have engaged in the practice of orthopaedic surgery in the United States or Canada for at least three years prior to submission of his application.

(c) He must have served an internship in a general hospital acceptable to this board. Beginning in 1951 and thereafter, applicants for Part I of the examinations must have had a year of surgery in addition to their internship.

(d) He must be duly authorized to practice medicine in the state or province of his residence.

(e) He must be ethical and have good professional standing.

(f) He must be a member of the American or Canadian Medical Association before he can be declared as eligible for Part II of the examinations.

Section 2. Special Qualifications: The trainee should realize that preparation for the specialty of orthopaedic surgery should include a sound knowledge of anatomy, pathology, physiology, bacteriology and biochemistry as these basic sciences apply to orthopaedic surgery. In addition he should have observation and first hand experience in the diagnosis, treatment, operative and postoperative care of recent and old fractures and other orthopaedic problems of adults and children. However, when so desired the trainee may substitute additional experience in fractures and adult orthopaedics for the work in children's orthopaedics as outlined in subsequent paragraphs.

Many hospital services approved for orthopaedic training have all phases represented in such proportion that they can be given concurrently over a three year period and provide a well balanced program. Such a plan of training is probably the most desirable. However, it is possible for one to obtain satisfactory training by taking various phases of the work in different institutions (matched training). In order to help the trainee plan a well balanced program of matched training the board suggests that it be arranged as follows: adult orthopaedics, one year or one third of the training period; fractures, six months or one sixth; basic sciences, six months or one sixth and children's orthopaedics, one year or one third, (as previously indicated a second year of fractures and adult orthopaedics may be substituted for the year of children's orthopaedics).

The clinical phases of training may be obtained in hospitals or under preceptors where adequate facilities are not available for instruction in the basic sciences. In such cases the trainee should spend at least six months in the graduate department of a medical school which can offer adequate facilities and instruction in these subjects.[1]

On completion of a year of internship and a year of surgery (the latter requirement being applicable to those who apply for Part I of the examinations in 1951 and thereafter), the trainee may take his special work in orthopaedic surgery by one of three plans: (1) Resident training on an orthopaedic service of a hospital approved by the Council on Medical Education and Hospitals. (2) Combined Resident Training and Assistantship. (3) Preceptorship.

(1) Resident Orthopaedic Training: The applicant should serve for three years as a resident in Orthopaedic Surgery on services approved by the Council on Medical Education and Hospitals. When taken as matched training, each of the required phases should be taken on a service approved for that particular phase and all phases must be covered. If the trainee elects to substitute additional adult orthopaedics and fractures for a year of children's orthopaedics, the training that is substituted must be acquired on an approved orthopaedic service

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[1] Further suggestions relating to basic science training and details concerning requirements for approved plans of resident training are published in a pamphlet which may be obtained from the secretary of the board.

and the total period of resident training must be three years. The type of credit available in various institutions is indicated by the symbols "A," "C," "F" and "S" in the lists of approved residencies published by the Council on Medical Education and Hospitals.

(2) Combined Resident Training and Assistantship: In special instances, with the prior approval of the Committee on Resident Training, the board will recognize for not over two years of training in orthopaedic surgery, periods of training in which the candidate combines work as *resident* on a hospital service, with part-time assistantship to an orthopaedic surgeon certified by the American Board of Orthopaedic Surgery, provided that the major part of his time is spent by the candidate in the hospital service.

(3) Preceptorship: In certain instances, the board may recognize training under the preceptorship plan. Before taking training under a preceptor, the applicant must have completed an internship and a year of surgery. The preceptor must be a diplomate of the board whose clientele is large enough to give the trainee experience in all phases of orthopaedic work. The trainee will be required to serve as *full time assistant* for five years and during this period the preceptor should devote special periods of time each week, outside of the routine hours employed in the hospital and office practice, to assist the trainee with organized courses of study similar to those covered during resident training. If facilities and instruction in the related basic sciences are not available, the trainee should spend at least six months of this five year period as a student in a recognized graduate medical school where these subjects can be provided. On completion of the five years under a preceptor, the trainee should engage in practice, limited to orthopaedic surgery, either alone or associated with a diplomate, for a further period of five years, before becoming eligible for Part II of the examinations.

Section 3. Practice Requirement: These requirements are intended not only to test the applicant's determination to practice in an ethical manner and limit his practice to the special field of orthopaedic surgery, but also his ability to increase his scientific knowledge. Prior to making application for Part II, applicants who took training as residents on approved orthopaedic services, should have had at least two years of experience in practice limited to the field of orthopaedic surgery. Applicants who had preceptorship training, must have had five years of practice limited to the specialty. Applicants who did not take children's orthopaedics, but substituted adult orthopaedics and fractures instead, must have limited their practice to the same field in which they were trained.

Section 4. Credit for Services with the Armed Forces: Because in some instances applicants who served with the Armed Forces acquired good training in orthopaedic surgery, credits up to a maximum of two years, may be allowed. Such credit, however, may be granted only on presentation of evidence that such service is, in the opinion of the Committee on Eligibility, equivalent to similar periods of approved resident training. Those requesting credits for training acquired while in the service, should submit their completed Record of Professional Assignments with their application.

(a) A year of orthopaedic experience with the Armed Forces, when approved by the Committee, *may* be accepted to replace one of the three required years of orthopaedic training.

(b) A second year of orthopaedic service with the Armed Forces may be credited as a year toward the practice requirement.

(c) Credit for military service will be considered for assignments covered between January 1941 and July 1946.

Article 8. *Section 1.* Examinations. Application for examination: Applications for examinations, Part I and Part II, shall be filed with the secretary upon the prescribed forms and shall be accompanied by the prescribed fees which the board may fix from time to time. The required data shall be entered in *typewritten* form and the application must be accompanied by an unmounted *autographed* recent photograph of the applicant. The names of two diplomates of the board shall be supplied by the candidate for reference.

The completed application must be filed with the secretary at least 60 days prior to date set for examination.

The data submitted in each application must be checked and verified in the offices of the American Medical Association.

Letters of reference shall be obtained by the secretary from diplomates whose names have been submitted by the applicant. Additional information may be sought from other available sources.

If an application has been approved, the candidate will be notified by the secretary and should then forward the required fee for the examination, Part I or Part II, as the case may be.

Section 2. Committee on Eligibility: A committee of three members from the board, to be designated the "Committee on Eligibility," shall meet with the secretary at least thirty days prior to the examination and review the data submitted in each application. They shall determine whether or not the applicant has fulfilled the requirements specified by the board for practice of the specialty. This committee shall have the authority to approve or reject the applicant and shall direct the secretary to give him written notice of their decision. No applicant shall be rejected except when the committee as a whole has reviewed his data and has voted unanimously that he is not qualified for the examination. If the rejection is based on inadequate training, the committee shall indicate the additional training that will be required. When applications for Part I of the examination are reviewed, the committee can on request of the applicant, designate the amount and character of additional training that he should take to qualify for Part II.

Section 3. Advisory Committee of Service Consultants: The Committee on Eligibility shall be privileged to form an Advisory Committee of Service Consultants to consist of diplomates who served as Orthopaedic Consultants in the various divisions of the Armed Forces during World War II. This committee, or any of its members, may be called on to assist in evaluation of orthopaedic training obtained by an applicant while serving with the Armed Forces.

Section 4. Examinations: Applicants for certification will be required to take the examination of the board in *two* parts. No applicant *shall be permitted to take both parts of the examination at the same time, nor can he be permitted to take Part II until he has successfully passed Part I.* These may be held in different places and on different dates to meet the needs and convenience of candidates and board members. Announcement of the time and place for examination will be made through the medical journals.

(1) Examination Part I

A committee of three members of the board shall be appointed by the president and shall be charged with the responsibility for setting the dates and places for examination, securing additional examiners to assist in the work, formulating the program of subjects and interviews for the oral quizzes, and providing questions for the written examination. This committee will likewise be responsible for the arrangements at each place the examination may be held.

(2) Examination Part I

(a) Eligibility for Examination Part I: Minimum requirements for eligibility for examination, Part I, shall consist of completion of an internship (and a year of surgery effective for Part I in 1951), followed by at least a year of resident training in orthopaedic surgery on an approved service.

Applicants who have completed more than this minimum requirement are eligible for Part I at any time up to completion of their full requirements; however, candidates who are fully qualified must submit application for Part I and successfully pass this examination before submitting application for Part II.

Candidates who make application based on preceptorship training will be considered by the Committee on Eligibility on completion of an internship and a year of resident training in surgery, followed by five years as a full time assistant under a preceptor who is a diplomate of the board.

(b) Examination, Part I: This part shall consist of a written examination and oral interviews covering those parts of anatomy, pathology, physiology and biochemistry related to surgery and orthopaedics. In addition there will be questions on fundamental surgical principles, elementary fractures and orthopaedic procedures, history-taking and physical examination.

(3) Examination, Part II

(a) Eligibility for Examination, Part II: Candidates applying for examination, Part II, must have successfully passed Part I and must have completed the prescribed training and practice periods, as defined in Article 7, Section 2.

A separate application for Part II must be completed and forwarded to the secretary, together with the required application fee, at the specified time.

(b) Examination, Part II: This part of the examination will be given in only one city once each year. It will consist of oral quizzes and a written examination covering the advanced work in all phases of orthopaedic surgery. The oral examinations will include an interview in anatomy, pathology, fractures, congenital and acquired deformities, static and postural defects and other orthopaedic subjects.

(c) Applicants who have qualified with a year of children's orthopaedics will have separate written and oral questions related to this phase of orthopaedic surgery.

In certain instances, on recommendation of the Committee on Eligibility a representative of the board may be requested to make a visit of inspection to review the applicants' work in his own community. In other instances, the committee may require the candidate to submit copies of complete records of twenty-five major surgical cases and abstracts of an additional twenty-five cases.

(4) Examinations Grades

The written examination shall represent 50 per cent of the total grade and each of the five oral interviews shall represent 10 per cent of the grade. The grades on oral interviews shall be entered by each examiner immediately at the close of the interview.

The written examination shall be graded by board members and every paper falling below the passing mark must be reviewed by two additional examiners. After the grades are totaled, they shall be reviewed by the board as a whole and the individual grades of each candidate who has failed shall be thoroughly reviewed and discussed. No candidate shall be notified of failure except with the unanimous consent of the entire board.

(5) Re-examination

An applicant who fails to pass Part I or Part II of the examinations may be re-examined a second and third time in each part by paying the prescribed examination fee each time he is re-examined. Additional *application* fees are *not* required for re-examination. The applicant who fails must appear for his second or third re-examination within three years after the first failure. After three years a new application with the appropriate fee must be submitted.

After three successive failures in Part I or Part II of the examinations the applicant must have had additional graduate training in orthopaedic surgery before submitting a new application.

Article 9. *Section 1.* Certification: When an applicant has successfully passed Part II of the examinations he shall be entitled to a certificate of the board. This certificate shall state that he has been found by this board to be qualified to practice the specialty of orthopaedic surgery. The certificate shall be issued in such form as may be adopted by the board and shall be signed by the officers and members of the board.

Section 2. No certificate will be issued to candidates who have only successfully passed Part I of the examinations but they will be given due notice by the secretary in writing that they have passed the examination.

Section 3. An up-to-date listing of all those who have been examined and certified by the board, shall be prepared annually by the secretary and copies shall be mailed to each diplomate. Those whose training includes a year of children's orthopaedics shall be indicated in these listings by an appropriate symbol.

Article 10, *Section 1.* Seal. A seal containing the words and numerals "American Board of Orthopaedic Surgery, MCMXXXIV," around the outside with the words "Orthos and Pais" in Greek in the center with the word "Incorporated" above the center and the word "Delaware" below the center, is hereby adopted as the corporate seal.

Article 11. Standing Committees: There shall be three standing committees of the board and the vacancies that occur as a result of termination of service or resignation of members shall be filled by appointment by the president.

Each of these committees shall consist of three members.

The Committees are as follows:

(1) The Committee on Eligibility.
(2) The Committee on Examinations.
(3) The Committee on Resident Training.

Section 1. The Committee on Eligibility shall consist of three members whose duties are described under Article 8, Section 2.

Section 2. The Committee on Examinations shall consist of three members whose duties are described under Article 8, Section 4, (1).

Section 3. Because the Council on Medical Education and Hospitals requires that a committee from the board review and advise with it on applications for approval of resident training programs, the president shall appoint a committee of three board members to be known as the Committee on Resident Training. The secretary shall refer to this committee all questions relating to resident training and may call a meeting of the committee to confer with members of the Council from time to time as may be required. This committee shall also advise with the Joint Committee on Postgraduate Training from the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons in regard to approval services and standards of training.

Article 12. *Section 1.* Amendments: These By-Laws may be amended, modified or repealed by the vote of at least five members at any regular or special meeting of the board; provided however, written notice of the proposed action stating the substance thereof shall have been given each member at least twenty days before the meeting.

TIMES AND PLACES FOR EXAMINATION

Examination, Part I, will be given probably during May of each year in various centers that will be designated by the board. The secretary will give applicants advance notice of the date, place and hour.

Examination, Part II, will be given in one place and probably not oftener than once each year. As a rule it will be in connection with the meeting of the American Academy of Orthopaedic Surgeons and will precede the meeting.

FEE SCHEDULE

(1) Application, Part I, fee $15.00, not returnable.

(2) Examination, Part I, fee $35.00, payable only by those approved by the Committee on Eligibility and forfeited if the candidate fails to appear for the next scheduled examination.

(3) Application for Part II, fee $15.00, not returnable.

(4) Examination, Part II, fee $35.00, payable only by those approved by the Committee on Eligibility and forfeited if the candidate fails to appear for the next scheduled examination.

(5) Re-examination. See Article 8, Section 4, (5).

This fee schedule effective as of January 19, 1946.

Address all communications to the secretary-treasurer.

AMERICAN BOARD OF OTOLARYNGOLOGY

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ORIGIN, AIMS AND METHODS

In 1916 the American Academy of Ophthalmology and Otolaryngology appointed a committee consisting of Drs. J. C. Beck, Thomas E. Carmody and John M. Ingersol to examine candidates in otolaryngology. The following year Drs. Harris P. Mosher, Ross Hall Skillern and Robert M. Lynch were added to the committee.

In 1924, through the efforts of Dr. George Shambaugh, Sr., the above committee was enlarged to include representatives from each of the following societies: The American Laryngological, Rhinological and Otological Society; The American Academy of Ophthalmology and Otolaryngology, and the Section of Laryngology, Otology and Rhinology of the American Medical Association. Each organization appointed two members, making a total of ten which constituted the first American Board of Otolaryngology. The original members were: Dr. J. C. Beck of Chicago; Dr. T. E. Carmody of Denver; Dr. T. H. Halstead of Syracuse, N. Y.; Dr. H. W. Loeb of St. Louis; Dr. R. C. Lynch of New Orleans; Dr. H. P. Mosher of Boston; Dr. B. R. Shurly of Detroit; Dr. R. H. Skillern of Philadelphia; Dr. F. R. Spencer of Boulder, Colorado, and Dr. W. P. Wherry of Omaha, Nebraska.

OBJECTIVES

The objectives of the American Board of Otolaryngology are to establish the qualifications for the practice of otolaryngology and to hold examinations and to certify those otolaryngologists whom the board finds qualified.

The Articles of Incorporation state the objectives of the board as follows: "The object of the corporation shall be to elevate the standards of otolaryngology, to familiarize the public with its aim and ideals, to aid in the protection of the public against irresponsible and unqualified practitioners, to receive applications for examination in otolaryngology, to conduct examinations of applicants, to issue certificates of qualification in otolaryngology as authorized by the board and to perform such acts as will advance the cause of otolaryngology.

REQUIREMENTS

The following qualifications are required by the board:

1. A candidate acceptable for the examination must have been a citizen of the United States (or Dominion of Canada) for at least five years, a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association, have had at least one year's general internship in an approved hospital (or its equivalent), and be of good moral character and ethical in his professional relations. Candidates from foreign countries must be permanent residents and citizens thereof, and meet the general requirements above.

2. A candidate must have membership in the American Medical Association, the Canadian Medical Association, or other medical societies of equal standing recognized by the Council on Medical Education and Hospitals of the American Medical Association.

3. Each candidate must have had acceptable training in the basic sciences which are fundamental to the intelligent practice of otolaryngology, including anatomy of the ear, nose, throat, neck, chest, esophagus and related nervous systems, pathology, bacteriology, physiology, didactic otolaryngology and fundamentals of surgery. This requirement may be met by its inclusion in resident training or by a formal postgraduate course.

4. (a) EFFECTIVE UNTIL 1950—a candidate must have completed a two years' residency in otolaryngology or a three years' residency in ophthalmo-otolaryngology and have restricted his practice to otolaryngology (or ophthalmo-otolaryngology) for a minimum of three years or four years respectively, which may include the period of training.

4. (b) EFFECTIVE AFTER JULY 1, 1950—candidates must pursue a course of three years' study in otolaryngology, or four years' study if ophthalmology be included (in which case there must be a minimum of 50 per cent spent in the study of otolaryngology). The three years may be spent in an approved residency of that duration, which residency may include study of the basic sciences as specified above, or the candidate may pursue a formal course in the basic sciences, and complete his training with a residency which will give him a total of three years' study in the specialty. In addition to the above, the candidate must have had a minimum of one year in practice limited to the specialty.

5. (a) EFFECTIVE UNTIL 1950—five years' practice limited to otolaryngology (or ophthalmo-otolaryngology) may be accepted in lieu of the requirements in section 4-a, subject to the approval of the Credentials Committee of the board.

5. (b) EFFECTIVE AFTER JULY 1, 1950—a candidate, in addition to the requirements in Nos. 1, 2 and 3, may qualify for examination if he has limited his practice to otolaryngology (or ophthalmo-otolaryngology) for six years.

6. Candidates who cannot meet all of the above requirements may be accepted for examination in exceptional circumstances but only upon the recommendations of the Credentials Committee.

7. A limited certificate in one of the subspecialties of otolaryngology may be issued at the direction of the board.

All candidates must comply with current board regulations, regardless of the time of filing application.

CREDIT FOR MILITARY SERVICE

The board will allow credit for one year restricted practice while in the armed forces. Further credit may be allowed at the discretion of the board, based on the merits of the individual case and governed by the authenticated medical officer's record.

APPLICATION AND FEES

1. Application must be made in duplicate on special blanks procured from the secretary. The completed application blank must be returned to the secretary, together with the other required credentials, 120 days in advance of the examination at which the candidate desires to appear.

2. The applications must be accompanied by two small photographs of the candidate, together with verification of the period of enrollment from the institutions where training in otolaryngology was obtained, and the names of two or more otolaryngologists, preferably diplomates of the board, from the vicinity of the candidate's place of residency, to be used as references.

3. The fee for the examination is $100, no part of which is returnable. Of this sum $25 must accompany the application. No application will be acted on until the $25 application fee is received. The balance of the fee—$75 must be paid to the secretary upon notification that the candidate has been accepted for examination and at least 90 days in advance of the date of examination. A reexamination fee of $50 is required of candidates conditioned in one or more subjects.

4. The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expense.

5. The application remains valid for three years. An applicant must appear for examination within this time or forfeit the fee.

6. The board, acting as a committee of the whole, reserves the right to reject an applicant for any reason deemed advisable and without stating the same and the action of the board shall be final.

EXAMINATION

Examination will be held at such time and place as the judgment of the board may dictate. Advance notice of examinations will be given in The Journal of the American Medical Association and the several special journals devoted to otolaryngology. So far as is possible these will be held biannually at or near, the time and place of meeting of the American Medical Association, or special societies, and of the American Academy of Ophthalmology and Otolaryngology. The examinations cover from two to four days.

The type of examination is as follows:

(1) Clinical, covering the actual handling of patients, including history taking, physical and functional examinations, the use of laboratory and x-ray findings and a discussion of differential diagnosis.

(2) Didactic, oral examinations covering all phases of otolaryngology, including physiology.

(3) Gross and microscopic pathology.

(4) A written examination may be included when the board deems this advisable.

REEXAMINATION

A candidate who is conditioned in his examination may be admitted to a subsequent examination after one year and within the three-year period dating from his application on payment of an additional fee of $50 and 120 days' notice of intention to appear is required.

Candidates who have failed in the examination may be accepted for reexamination upon recommendations of the Credentials Committee. Satisfactory evidence of further study and progress will be required. A new application must be filed and accompanied by the regular fee of $25 and the balance of the fee—$75 will be due on notification of acceptance.

CERTIFICATION

1. A certificate granted by the board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice otolaryngology, nor does the board intend or attempt in any way to interfere with or limit the professional rights and activities of any duly licensed physician. Its aim is to improve the standards of practice of otolaryngology and to certify as specialists those who voluntarily comply with its requirements and regulations.

2. The final action of the board is based on the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examinations.

REVOCATION OF CERTIFICATES

The certificates issued by the board are subject to the provisions of the articles or certificate of incorporation, the by-laws and action of the board, and each certificate is subject to revocation in the event that: (a) the issuance of such certificate or its receipt by the physician so certified shall have been contrary to any of the provisions of the certificate of incorporation or by-laws: or (b) the physician so certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to or could have been ascertained by the directors of the board at the time of the issuance of such certificate: or (c) the physician so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representative: or (d) the physicians so certified shall violate the standards of ethical practice of medicine or shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Directors, moral turpitude in connection with his practice of medicine: or (e) the physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

CANDIDATE'S PLEDGE

Candidates are required to sign the following pledge:

I HEREBY APPLY to the American Board of Otolaryngology for examination by the said board in accordance with its rules and herewith enclose the application fee of $25.00 which is not returnable. I understand that the balance of $75.00 is to be paid if and when accepted for examination and is likewise not returnable. I hereby agree that prior to an examination, or subsequent to my examination, the board may investigate my standing and reputation as a physician, including my reputation for complying with the standards of ethics of the profession, and may refuse to examine me, or, having examined me, may refuse a certificate and such refusal may be for any reason deemed advisable and without stating same, and any refusal to grant a certificate may not and shall not be questioned by me in any court or law or equity or other tribunal, or otherwise nor shall I have any claim of any kind in the event of such refusal nor shall I be entitled to a return of the fee accompanying the application. I further agree to be bound by the provisions of the articles of incorporation as amended from time to time and all by-laws whether now in force or hereafter enacted.

Address all communications to the secretary-treasurer.

AMERICAN BOARD OF PATHOLOGY

N. C. FOOT, President, New York.
F. WILLIAM SUNDERMAN, Vice President, Philadelphia.
ROBERT A. MOORE, Secretary-Treasurer, Washington University School of Medicine, St. Louis 10.
PAUL R. CANNON, Chicago.
R. PHILIP CUSTER, Philadelphia.
JOSEPH A. KASPER Detroit.
JAMES W. KERNOHAN, Rochester, Minn.
JAMES B. MCNAUGHT, Denver, Colo.
EDWIN W. SCHULTZ, Stanford University, Calif.
SHIELDS WARREN, Boston.

ORGANIZATION AND OBJECTIVES

In June, 1935, the Section on Pathology and Physiology of the American Medical Association and the American Society of Clinical Pathologists appointed committees which acted jointly in consideration of the feasibility and necessity of a national qualifying board. The joint committees agreed unanimously that such a board should be established and proceeded to draw up by-laws for such a board. In May 1936 the American Society of Clinical Pathologists and the Section on Pathology and Physiology of the American Medical Association accepted the proposed by-laws, authorized the nomination of four members each to the board and suggested incorporation in the state of Michigan. Approval of the board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association was given. On July 19, 1936, the organization of the board was carried out in Chicago.

Dr. Karsner of the American Medical Association Section and Dr. Foord of the American Society of Clinical Pathologists, whose terms on the board expired in 1938, were renominated by their respective organizations and were reelected by the board.

Dr. E. B. Krumbhaar, who had served as a member of the board since its inception, resigned in 1940, and his resignation was regretfully accepted. Dr. N. Chandler Foot of New York was elected by the board to fill Dr. Krumbhaar's unexpired term. Drs. Sanford and Lamb were renominated to the board by the American Society of Clinical Pathologists and Drs. Moore and Hartman were renominated by the Section on Pathology and Physiology of the American Medical Association.

At the fall meeting in 1942 two new members, Dr. Paul R. Cannon, Professor of Pathology at the University of Chicago, and Dr. Robert A. Moore, Professor of Pathology of Washington University, St. Louis, were elected to the board under the provision that trustees at large could be elected at the discretion of the board itself. These new members, representing as they do the younger group of professors in leading medical schools, have already proven themselves invaluable in the conduct of board activities.

In 1943, at the annual business meeting, the American Society of Clinical Pathologists made no nomination for the Board of Pathology in view of the fact that the Section on Pathology and Physiology of the American Medical Association held no meeting and made no nomination. In accordance with the by-laws Drs. Kracke and Foot continue on the board until nominations and elections are made.

In 1944, Dr. Kracke and Dr. Foord of the American Society of Clinical Pathologists had completed two terms and therefore, under the By-Laws, were not eligible for reelection. Dr. James B. McNaught, Professor of Pathology, University of Colorado, and Dr. F. William Sunderman, Associate Professor of Medical Research, University of Pennsylvania, were nominated by the American Society of Clinical Pathologists and elected by the board. In addition, the board elected a third member at large, Dr. R. Philip Custer of the Presbyterian Hospital, Philadelphia.

The annual meeting of the board in 1946 was a most important one. Four members of the Trustees who had served since the founding, Dr. Arthur H. Sanford, Dr. Frederick H. Lamb, Dr. F. W. Hartman, and Dr. J. J. Moore, had served two terms. With the election of their successors, the Board of Trustees was made up entirely of those who had not participated in the initial organization. The American Medical Association Section nominated Dr. James Kernohan of the Mayo Foundation and Dr. R. Philip Custer (a member-at-large), and the American Society of Clinical Pathologists nominated Dr. Edwin W. Schultz of Stanford University and Dr. Joseph A. Kasper of Detroit.

Officers of the board elected in 1946 were reelected in 1947 as follows:

Dr. N. C. Foot, President.
Dr. F. William Sunderman, Vice-President.
Dr. Robert A. Moore, Secretary-Treasurer.

PURPOSES OF THE BOARD

A. To encourage the study and promote the practice of pathology.

B. To elevate the standards and advance the cause of pathology by encouraging its study and improving its practice.

C. To determine the competence of those wishing to practice this specialty of pathology and to arrange, conduct and control investigations and examinations to determine the qualifications of such individuals who voluntarily apply for the certificates issued by the corporation.

D. To grant and issue certificates in the special field of pathology to voluntary applicants therefor and to maintain a registry of holders of such certificates.

E. To serve the public, the medical profession, hospitals and medical schools by preparing and furnishing lists of specialists who have been certified by the corporation.

VALUE OF THE CERTIFICATE

Judging from the experience of other specialties operating a certifying board it is anticipated that the certificate will be of value in that the medical profession, the lay public, and hospital administrators will utilize certificates from the board as a means of discriminating between those that are thoroughly qualified in pathology and those that are not. Lists of those holding certificates will be made available from time to time by this board through the publication of the same in pamphlets and in national medical journals.

BOARD NOT AN EDUCATIONAL INSTITUTION

The board is in no sense an educational institution and the certificates of the board are not to be considered degrees. Therefore the certificate does not confer on any person legal qualifications, privileges, or license to practice medicine or the specialty of pathology. The board does not purport in any way to interfere with or limit the professional activities of any licensed physician. Its chief aim, as stated above, is to standardize the qualification for the specialty of pathology and to issue certificates to those voluntarily complying with the requirements of the board.

GENERAL REQUIREMENTS

A. General qualifications:

1. Satisfactory moral and ethical standing in the profession.
2. License to practice medicine.
3. Membership or associate membership in the American Medical Association or by courtesy membership in such Canadian or other national medical societies as are approved by the Council on Medical Education and Hospitals of the American Medical Association.
4. That the applicant devotes his time primarily and principally to the practice of pathology.

B. Professional education.[1]

1. Graduation from a medical school in the United States or Canada, approved by the Council on Medical Education and Hospitals of the American Medical Association.

C. Special training, to be effective after July 1, 1938:

1. Completion of an internship of not less than one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.
2. A period of study, exclusive of internship, of not less than three calendar years, exclusive of reasonable vacation periods, in an institution recognized by the same Council and the Board of Trustees as competent to provide a satisfactory training in the field of pathology. This period of special training preparation shall include the following:
   (a) Graduate training for one year in the various phases of clinical pathology.
   (b) Training and experience of not less than two years in a department of pathologic anatomy.
   (c) Such training may be combined or in sequence.
3. A fifth year of training or practice in pathology.

D. Special qualifications:

1. The board may accept candidates without special training as outlined in Section C above provided that:

(a) The candidate shall have been for a period of five years of professorial rank in a department of pathology in an approved medical school, before 1939; or the candidate shall have been practicing pathology for ten years before 1939 in a senior position in a hospital having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association. Candidates with the qualifications outlined above may be certified without examination at the discretion of the board until Dec. 31, 1947.

(b) The candidate shall have been in the practice of pathology for ten years after internship. . . . For each year of training these candidates have received which met the qualifications outlined under "2" of Section C of General Requirements, two years of credit will be given toward the ten which they must ultimately have to become eligible for examination. Candidates with the qualifications outlined in this paragraph may become eligible for examination at the discretion of the board.

CREDIT FOR MILITARY SERVICE

Credit is allowed for training and experience in pathology as it may be acquired by the applicant during his military service. This credit for training or experience or both is given on an individual basis and will depend upon the opportunity the applicant has had as indicated by his medical service record in the specialty of pathology.

After July 1, 1947, no credit will be given to those in the regular corps of the military services or Public Health Service, except for training comparable to that outlined in Sections C and D of General Requirements. This rule does not apply to those serving in the Reserve Corps.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. Applications cannot be given consideration by the board unless accompanied by the application fee.

The application or examination fee for candidates is $35.00. If certified without examination, $10.00 of fee will be refunded. If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years, without additional fee. After two reexaminations the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The examination fee of $35.00 has been arrived at after careful consideration, and is based on actual estimates of the expense of examination and administration. None of the board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the board his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for same.

EXAMINATIONS

Written and oral examinations will be held at or near the time and place of national medical meetings at the discretion of the board. If a number of applications from any region of the country are received an examination in conjunction with a national meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examiners will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis and interpretation. The applicant may apply for certification in either pathologic anatomy or clinical pathology, or both.

DEFINITIONS

1. Pathologic anatomy is that branch of pathology which deals with the morphologic aspects of disease, recognition being given that this definition covers two phases of pathology.
   (a) The applied phase, with special attention to biopsy description and diagnosis.
   (b) The academic phase of teaching and general morphological diagnosis.
2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, biochemistry, parasitology, hematology, and clinical microscopy, in relation to the diagnosis, prognosis, and treatment of clinical disease.

REEXAMINATIONS

In case the candidate fails in the qualifying examination he will be eligible for reexamination after one year has elapsed, but he must give written notice of his intention to appear for reexamination. Two reexaminations are allowed without an additional fee, provided they are taken within a three year period. The candidate who fails three times must file a new application and pay a second $35.00 fee before he is eligible for further examination.

REVOCATION OF CERTIFICATES

Certificates issued by the American Board of Pathology are subject to the provisions of the Articles of Incorporation, No. XI, Section 4. Any certificate issued by the Board of Trustees shall be issued subject to revocation in the event that:

A. The physician or party so certified shall have made any misstatement of misrepresentation of a material fact in this application, or in any other communication to the board or its representatives, which misstatement of misrepresentation affected the eligibility of the physician or the party so certified.

B. The issuance of such certificate has been made contrary to or in violation of any of the rules, laws or regulations of this corporation.

C. It is ascertained that the physician or party so certified is not eligible in fact to receive such certificate.

D. The physician or party receiving such certificate shall prior to the issuance of such certificate or thereafter have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor in the opinion of the Board of Trustees, shall involve moral turpitude.

E. The physician or party receiving such certificate shall prior to or thereafter have his license to practice medicine revoked.

F. The physician or party receiving such certificate shall be expelled from any of the societies or organizations making him eligible to this corporation as an applicant for such certificate.

Address all communications to the Secretary-Treasurer.

AMERICAN BOARD OF PEDIATRICS

C. Anderson Aldrich, President, Rochester, Minn.
Donovan J. McCune, Vice President, New York.
Lee F. Hill, Secretary-Treasurer, 718 Royal Union Building, Des Moines, Iowa.
Hugh McCulloch, St. Louis.
Charles F. McKhann, Cleveland.
M. Hines Roberts, Atlanta, Ga.
Edward B. Shaw, San Francisco.
Harold C. Stuart, Boston.
Ashley A. Weech, Cincinnati.

ORIGIN

The American Board of Pediatrics was established in June 1933 by joint action of the American Pediatric Society, the American Academy of Pediatrics and the Section on Pediatrics hospital, or under a sponsorship accredited by the American Board of Plastic Surgery for such training. By the latter statement it is meant that one may secure the necessary and specified training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered.

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[1] In case of an applicant whose education and/or training has been received outside the United States or Canada, his credentials must be acceptable to the National Board of Medical Examiners and the American Board of Pathology.

The period of special training should emphasize the relation of the basic sciences, anatomy, pathology, physiology, biochemistry and bacteriology, to the application of surgical principles which are fundamental in all branches of surgery.

In addition, the candidate before becoming eligible for consideration by any surgical specialty board must understand and be trained in the following subjects, viz.: the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics, wound healing, etc.

TRAINING FACILITIES

Neither the board nor its individual members can be responsible for the placing of applicants for training, but it should be noted by the applicants that accredited work will be considered that which is done on a plastic surgery service approved by the board. A list of approved plastic surgical services is available in the secretary's office.

Because of the vagaries of training, such as changes from one specialty to another, interims of military duty and other service to the country, the aptitude and skill of candidates, the board may, at its discretion, review and make recommendations for or against certification of certain applicants outside of the listed qualifications and requirements.

The board reserves the privilege of requesting lists of operations done solely by the candidate for one or two years, or of requesting special and extra examinations, written, oral or practical, and of requesting any specific data concerning the candidate that may be deemed advisable before making final decisions for certification.

Furthermore, because of its endeavor to arrive at the most equable policy for all concerned, the board reserves the privilege of changing requirements and qualifications without necessarily issuing a new booklet of information.

CASE REPORTS

Candidates whose general eligibility and professional requirements are found satisfactory shall be required to submit twenty-five diversified case reports, together with photographs, to the secretary of the board. This group of case reports must include a variety of material from the entire body rather than a number of cases of one type, and should carry the candidate's personal deductions, conclusions and comments and should be sufficiently detailed to show if the conclusions drawn indicate a grasp of the subject and if the results justify the procedure.

Each case report should be typewritten on paper approximately 8½ x 11 inches, separately numbered and paged, with the candidate's name on each page. Each report should be individually assembled and held by removable fasteners and should have a cover sheet with the candidate's name, the number of the case, hospital number, diagnosis and a brief summary of the case (not over 100 lines). The case reports, photographs and other data are to be filed with the permanent records of the board. Cases should be chosen from the private practice of the candidate or from the hospital or clinic services; in the latter case, their identification numbers are required. The initials, color, age and occupation of each patient should be stated, as should the name of the hospital where treated and dates of admission, operation and discharge. The important details of family history, if relevant, and of the previous history should be given. The history of the condition for which the candidate was consulted should be stated clearly and concisely, indicating previous treatment, if any, and the mental, social or economic factors involved. The physical examination of the patient with special reference to the existing deformities should be carefully described. All laboratory and other special examinations, such as roentgenograms which were made, should be reported, with a statement of what was determined by them. The indications for operation and for the type of operation employed should be given. The preliminary treatment and the type of anesthesia used should be stated. A full description of the operative technic with methods of hemostasis, suture and drainage, if any, and the name of the assistant should be given. The early and late postoperative course and results should be described.

Photographs of conditions and drawings of operative technic, illustrative of each case, should be included and securely attached to each case report, with name of the candidate and the number of the case indicated. All photographs should be made by a sharp focus lens from untouched negatives with identical lighting conditions, exposure and developing, and should show conditions before and after operations with clear detail.

If the case reports and lists of operations are approved, the candidate will receive subsequent information regarding taking the examinations.

EXAMINATIONS

The qualifying examinations will be divided into Part I—Written, and Part II—Oral and Practical.

Part I shall consist of a written examination prepared by the Examination Committee on questions which concern the theory and practice of surgery. The examination shall also include questions on applied anatomy, applied physiology, pathology, bacteriology, clinical laboratory methods, local and general anesthesia, shock, hemorrhage, the handling of tissues, wound healing, and surgical accidents.

Or, when finally adopted by the combined surgical specialty boards, the single, written basic examination (Part I) in the fundamentals of surgery will be the requirement, and will be practically as follows: That after not less than three years of acceptable basic training in surgery a candidate may be given an examination in the fundamentals of surgery, required of all who enter any surgical field, covering the following subjects: current application to surgery of applied biochemistry, pathology, anatomy, physiology, bacteriology and pharmacology, including the principles governing fluid and electrolyte balance, shock, hemorrhage, death of tissue, blood coagulation, inflammation, infections, modern drug therapy, anesthesia, wound healing, thrombosis, embolism, respiration and oxygen requirements, tumor growth, and other related subjects.

Part II shall, as far as possible, be of a practical nature, and shall be conducted by no fewer than two competent examiners selected by the board.

The clinical examination shall include any or all of the following:

1. The exhibition of patients who have undergone or who are undergoing treatment by the candidate.
2. Examination, diagnosis, and presentation of a plan of correction by the candidate of cases provided by the examiners.
3. Oral examination of the candidate and observations made in the operating room, treatment rooms, and wards.
4. A written examination concerning plastic surgery may be given to correlate the clinical evaluation.

In order to be eligible for Part II of the examination, a candidate shall have successfully passed Part I of the board or the basic examination of the combined surgical boards or have been certified by the American Board of Surgery and have had two to four years extra accredited training in plastic surgery.

REEXAMINATIONS

Candidates may be reexamined provided that one year shall elapse between examinations, except in such case as the board may, for good and sufficient reason, deny a candidate the privilege of reexamination. Candidates shall be required to pay a fee of $50 for reexamination.

FEES

The fee for the examination and the certificate of the American Board of Plastic Surgery is $100. Of this sum, $25 must accompany the application. The remaining $75 should be paid when the candidate is notified of acceptance for examination. There shall be no refunds.

This fee may be increased at the discretion of the board.

This board is a non-profit organization. The fees of candidates are used solely for defraying the actual expenses of the board.

Because of the limited number of surgeons certified by this board it is necessary to request $10 annually from diplomates, after the first year, to defray expenses of the board.

CERTIFICATION

A certificate, bearing the seal of the board and the signatures of its officers will be issued to each successful candidate attesting his qualification in plastic surgery.

It is the board's prerogative to determine the fitness professionally and ethically of any candidate for its certificate.

The action or decision of the American Board of Plastic Surgery regarding the certification of any candidate shall be final.

REVOCATION OF CERTIFICATE

The American Board of Plastic Surgery shall have the sole power, jurisdiction, and right to determine and decide whether or not the evidence or information placed before it is sufficient to constitute grounds for revocation of any certificate issued by the board, and the decision of the board in the premises shall be final.

Address all communications to the secretary-treasurer.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY

Walter Freeman, President, Washington, D. C.
A. R. Vonderahe, Vice President, Cincinnati.
Francis J. Braceland, Secretary-Treasurer, 102-110 Second Avenue, S. W., Rochester, Minn.
Spafford Ackerly, Louisville, Ky.
Kenneth Appel, Philadelphia.
Roland Mackay, Chicago.
H. Houston Merritt, New York.
Hans Reese, Madison, Wis.
George H. Stevenson, London, Ontario.
John C. Whitehorn, Baltimore.
Lawrence F. Wooley, Atlanta, Ga.
S. Bernard Wortis, New York.

HISTORY AND STATEMENT OF PRINCIPLES

The American Board of Psychiatry and Neurology was founded in 1934 following conferences of committees appointed by the American Psychiatric Association, the American Neurological Association, and the Section on Nervous and Mental Diseases of the American Medical Association. This action was taken in response to a widespread desire among specialists in psychiatry and neurology for some means of distinguishing the fully qualified specialist from the would-be specialist of inferior training and inadequate experience. That this desire is by no means limited to those who practice psychiatry and neurology is indicated by the formation of corresponding boards covering internal medicine, surgery, and the major specialties. The success of this method of distinguishing the specialists is indicated by the increasing number of candidates taking the examinations, and by the listings accorded in the American Medical Directory to those specialists holding certificates of the various boards.

CONSTITUTION AND ACTIVITIES

The American Board of Psychiatry and Neurology is composed of twelve members, four each from the American Neurological Association and from the American Psychiatric Association and two neurologists and two psychiatrists elected by the Section on Nervous and Mental Diseases of the American Medical Association. Annual elections to fill the places of members whose terms have expired take place in each of the nomination associations with the understanding that neurology and psychiatry are always equally represented on the board. The board holds annual meetings in December of each year for the transaction of whatever business may come before it and also holds special meetings for the purpose of examining candidates.

CHIEF FUNCTIONS

(a) To determine the competence of specialists in psychiatry and neurology.

(b) To arrange, control and conduct investigations and examinations to test the qualifications of voluntary candidates for certificates issued by the board.

(c) To grant and issue certificates or other recognition of special knowledge in the field of psychiatry and neurology to successful voluntary applicants therefor.

(d) To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

(e) To consider and advise as to any course of study and technical training, and to diffuse any information calculated to promote and ensure the fitness of persons desirous of qualifying for a certificate of qualifications to be issued thereby.

POLICIES AND PROCEDURES REGARDING APPLICATION, TRAINING, EXAMINATION AND CERTIFICATION

In carrying out its specified functions, the American Board of Psychiatry and Neurology has formulated By-Laws to guide its activities and to indicate to applicants and other interested persons its policies regarding training requirements, examinations, fees, etc. These By-Laws have been amended from time to time. The statements given below embody the most recent amendments and represent the current policy of the board (1947). If, however, a candidate has evidence of equivalent qualifications, training and experience, but not in the pattern here formulated, this evidence with appropriate documentary support may be included in his application, for evaluation and possible approval by the board.

Application for Certificates.—An application, in order to be considered at any meeting of the board, must be in the hands of the secretary of the board *not less than 90 days before the date of such meeting.* A proper application form may be obtained from the secretary. Application may be made for certification in psychiatry or in neurology or in both fields. Applications will be formally considered only when made on the official application blank in such form as may be adopted from time to time by the board and when accompanied by an application fee in such amount as may be fixed by the board.

The secretary of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire board at any meeting held for such certification.

Form of Certificates.—There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certifications shall be in such form as approved by the Board of Directors.

General Requirements for Applicants.—Each applicant for a certificate must establish that—

(a) He is a physician duly licensed by law to practice medicine.

(b) He is of high ethical and professional standing.

(c) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association. Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons.

(d) He has received adequate training in psychiatry or neurology, or both, as a specialty.

CLASSES OF APPLICANTS

Class A—Candidates graduated from medical school before the foundation of this board (1934) will not be held to the strict interpretation of the published requirements in formal graduate training. Under such circumstances the board will consider the training and experience of the applicant and decide whether or not he will be admitted to the examination.

Class B—Candidates graduated from a medical school after 1934 shall fulfil the following special requirements.

PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association. In case of an applicant whose training has been received outside the United States and Canada, his credentials must be satisfactory to the aforementioned Council and the Advisory Board for medical specialties.

2. Completion of a year's internship approved by the same Council in general medicine, general surgery, pediatrics or a rotating internship.

3. The nine month wartime internships, assistant residencies, or residencies will be accepted as an equivalent of one year.

SPECIAL TRAINING

(These requirements will be rigidly enforced after Jan. 1, 1948.)

Admission to the examination for certification in psychiatry or neurology requires a total experience of not less than five years.

There shall be a period of three years of full time study in institutions recognized by the Council on Medical Education and Hospitals of the American Medical Association, and approved by this board as competent to provide training in psychiatry or neurology. A candidate may submit to the board evidence of special training in psychiatry or neurology not covered in these specifications for its evaluation and approval.

In addition to three years of training under supervision, each candidate should have two years of clinical practice with major responsibility for the care of patients.

This training for psychiatrists should include clinical work with psychoneurotic and psychotic patients, combined with the study of the basic *psychiatric sciences, medical and social* psychology, psychopathology, psychotherapy, and physiological therapies, including a basic knowledge of the form, function and pertinent pathology of the nervous system. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training period should include instruction in the psychiatric aspects of general medical and surgical conditions and the behavior disorders of children and adolescents sufficient to develop practical ability to direct the treatment of such conditions. It should also include collaborative work with social workers, clinical psychologists, courts, and other social agencies. The training program of the candidate for certification in psychiatry should include sufficient training in neurology to recognize and to evaluate the evidences of organic neurological disease.

The training for neurologists should be based on clinical work with adults and children with neurological disorders, including the neurological complications of medical and surgical conditions. This shall be combined with study of the basic neurological sciences, neuroanatomy, neurophysiology, neuropathology, and neuroentgenology. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training should include sufficient psychiatry to enable the candidate to recognize and evaluate the common psychiatric reactions.

Candidates seeking certification in both neurology and psychiatry or supplementary certification in one after being certified in the other must submit evidence satisfactory to the board of additional two years of full-time basic training in the supplementary specialty.

Thus, no candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least seven years of training and experience for certification in both neurology and psychiatry.

TRAINING IN THE ARMED FORCES

Credit will be granted for one year of wartime service in the Army, Navy, Public Health Service and Veterans Administration. Further credit for basic training will be granted only if the training has been received in an institution recognized by the Council on Medical Education of the American Medical Association and approved by this board. Time beyond one year spent in the above government agencies may be credited to experience, providing the candidate has been regularly assigned to a service in neurology or psychiatry.

EXAMINATIONS

Date and places of examinations are set by the board at its discretion and are announced in *The Journal of the American Medical Association*, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Diseases*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the competence of the candidates. There will be separate examinations for certification in psychiatry and in neurology. The board requires some proficiency in neurology on the part of those it certifies in psychiatry and vice versa, but examines the candidate in accordance with the certificate he seeks. The examination will be of such type that no adequately trained individual will fail, yet they will be sufficiently searching so that the specialist in fact may be separated from the specialist in name. The practical examination will include the examination of patients under the supervision of the examiner. The manner of examining patients, and the reasoning and deductions therefrom, will constitute an important part of the examination. Oral and practical examinations will be given in the basic sciences with special regard to their clinical implications.

PAYMENT OF FEES

The candidate upon filing his application shall accompany it with an application fee of $25.00, which is not returnable. When notified by the secretary that he is eligible for examination, he shall send to the secretary an examination fee of $25.00 for examination in either psychiatry or neurology. There will be separate examinations for certification in psychiatry and in neurology. Should the applicant desire examination in both at one meeting of the board, he shall send an examination fee of $50.00. A candidate who has failed in one examination is eligible for reexamination within three years on payment of a reexamination fee of $25.00. A candidate who has been conditioned in one examination is eligible for reexamination within three years on payment of a reexamination fee of $10.00. A candidate who has been certified in either psychiatry or neurology, and who has been admitted to the supplementary examination for the other certificate, shall pay an additional examination fee of $25.00 The candidate who has failed twice, or one who does not apply for reexamination within three years, will be considered a new applicant.

PLEDGE

Each candidate is required to sign the following pledge:

"I hereby make application to the American Board of Psychiatry and Neurology, Incorporated, for the issuance to me of a certificate of qualification as a specialist in (a) Psychiatry; (b) Neurology; (c) Psychiatry and Neurology (check the one desired) and for examination relative thereto, all in accordance with and subject to its rules and regulations. On the issuance of the certificate I agree to and do become bound by the By-Laws of the American Board of Psychiatry and Neurology, Inc., so far as applicable.

"I agree to disqualification from examination or from the issuance of a Certificate of Qualification or to forfeiture and redelivery of such Certificate of Qualification in the event that any of the rules governing the examination are violated by me or for any one of the reasons set forth in the By-Laws. I agree to hold said American Board of Psychiatry and Neurology, Inc., its members, examiners, officers and agents, free from any damage or claim for damage or complaint by reason of any action they, or any of them, may take in connection with the application, such examination, the grade or grades given with respect to any examination, and/or the failure of said Corporation to issue to me such a Certificate of Qualification."

RULES AND REGULATIONS

The Board of Directors, from time to time, by resolution adopted by the affirmative vote of a majority then in office, may adopt, amend or repeal rules and regulations respecting requirements of applicants, the nature and extent of examinations and investigations and issuance of such certificates.

REVOCATION OF CERTIFICATES

All certificates issued for the Corporation shall be issued subject to the provisions of the Certificate of Incorporation and of the By-Laws of the American Board of Psychiatry and Neurology, Inc. Each such certificate shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician shall have been contrary to or in violation of any of the provisions of the Corporation's Certificate of Incorporation or By-Laws; or

(b) The physician so certified shall not have been eligible in fact to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to any or all of the directors of the corporation or could have been ascertained by any or all of the directors of the corporation at the time of the issuance of such certificate; or

(c) The physician so certified shall have made any deliberate misstatement of fact in his application for such certificate or in any other statement or representation to the corporation, its directors, representatives or agents, or

(d) The physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Directors of the corporation, moral turpitude in connection with his practice of medicine; or

(e) The physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censored as a physician by any court or other body having proper jurisdiction and authority.

AMERICAN BOARD OF RADIOLOGY

E. L. JENKINSON, President, Chicago.
I. H. LOCKWOOD, Vice President, Kansas City, Mo.
B. R. KIRKLIN, Secretary-Treasurer, Room 322, Mayo Clinic, Rochester, Minn.
RAY A. CARTER, Los Angeles.
D. S. CHILDS, Syracuse, N. Y.
L. H. GARLAND, San Francisco.
ROSS GOLDEN, New York.
H. DABNEY KERR, Iowa City.
L. C. KINNEY, San Diego, Calif.
F. W. O'BRIEN, Boston.
J. W. PIERSON, Baltimore.
U. V. PORTMANN, Cleveland.
DOUGLAS QUICK, New York.
LEO G. RIGLER, Minneapolis.
B. P. WIDMANN, Philadelphia.

HISTORY AND AUTHORITY FOR ORGANIZATION

The medical profession has long felt that there should be a standard of minimal requirements for the practice of any specialty in medicine in order to protect the public, the profession in general, and the specialists themselves. Some of the states have attempted by statute to prescribe such requirements in certain branches. Unless a better method of regulation were found, the other states would be likely to enact similar laws. The result would be forty-eight different standards for each of the many medical specialties. Obviously, a more practicable solution would be for each special group to put its own house in order and place its mark of approval on those qualified to practice as specialists in that particular field. Accordingly, in 1932, five nation-wide radiologic organizations, the Section on Radiology of the American Medical Association, the American Roentgen Ray Society, the Radiological Society of North America, the American College of Radiology, and the American Radium Society, each appointed a committee of three members to confer and investigate the feasibility of establishing a qualifying board. The following men were appointed by these five organizations: Drs. G. W. Holmes, J. W. Pierson, E. L. Jenkinson, W. E. Chamberlain, E. C. Ernst, W. F. Manges, L. R. Sante, L. C. Kinney, A. C. Christie, Albert Soiland, W. W. Wasson, Henry Schmitz, Lester Hollander, Rollin H. Stevens and B. R. Kirklin.

This combined committee met at Milwaukee in 1933, during the meeting of the American Medical Association, agreed unanimously that such a board should be established and so reported to the respective organizations. Each of the organizations approved the report, appointed three representatives, and empowered them to proceed to the formation of a national radiologic board. The members of the board thus chosen were: Drs. W. F. Manges, L. R. Sante and B. R. Kirklin, representing the American Roentgen Ray Society; Drs. A. C. Christie, E. C. Ernst and E. L. Jenkinson (succeeding Dr. Byron H. Jackson, originally appointed) representing the American College of Radiology; Drs. R. H. Stevens, Henry Schmitz and H. K. Pancoast, representing the American Radium Society; Drs. L. J. Menville, M. C. Sosman and Albert Soiland, representing the Radiological Society of North America, and Drs. L. C. Kinney, J. W. Pierson and G. W. Holmes, representing the Section on Radiology of the American Medical Association.

The board was incorporated, organized and held its first meeting in Washington, D. C., in May 1934. At that time the by-laws were adopted and provision was made by resolution for its proper function. The officers of the board elected at this meeting were:

Dr. H. K. Pancoast, President.
Dr. A. C. Christie, Vice President.
Dr. B. R. Kirklin, Secretary-Treasurer.

This move put into action the determined effort on the part of these five national organizations to improve the standards of the practice of radiology. It expects to accomplish this by various activities, such as the investigation and encouragement of facilities for graduate extension study and active clinical assistantships for men desiring to specialize in radiology. It will endeavor by regular examinations to determine the competence of specialists in radiology who apply for the certificate.

During 1934 the American Board of Radiology was accepted for membership in the Advisory Board for Medical Specialties and was also approved by the Council on Medical Education and Hospitals of the American Medical Association. The list of Diplomates of the board replaced Council's list of approved radiologists, and the latter list was discontinued.

PURPOSES

First: To encourage the study and promote and regulate the practice of radiology.

Second: To elevate the standards and advance the cause of radiology by encouraging its study and improving its practice.

Third: To determine the competence of specialists in radiology; to arrange, control and conduct investigations and examinations; and to test the qualifications of voluntary candidates for certificates to be issued by the board.

Fourth: To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

VALUE OF CERTIFICATE

The national radiologic organizations which have participated in the formation of the board and are sponsoring its activities, as well as other organizations, attach considerable importance to its certificate. It is expected that both the medical and the lay public, including hospital directors, will soon come to utilize the certificate from this board as a means of discriminating between those who are well grounded as specialists in radiology and those who are not.

To this end lists of those holding certificates from this board will be published and issued from time to time by the board. Similar lists will be published by the *American Journal of Roentgenology and Radium Therapy*, *Radiology* and *The Journal of the American Medical Association*. The Directory of the American Medical Association will indicate by a numerical symbol in the biographic data of those whose names are eligible to appear on these lists that they are diplomates of this board.

For emphasis it is repeated that the board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician, but it does aim toward standardized qualifications for those who claim to be specialists in radiology.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges, or license to practice radiology. Certificates of the board shall be issued upon one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.
2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (a) roentgenology; (b) diagnostic roentgenology; (c) therapeutic radiology.

DEFINITIONS

For the purposes of this board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.
2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.
3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.
4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL QUALIFICATIONS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

GENERAL REQUIREMENTS

1. Satisfactory moral and ethical standing in the profession.
2. A license to practice medicine in the state or county in which he resides.
3. Membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as herein provided, membership in other societies shall not be required.
4. That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under "Definitions," and that he devotes his time primarily and principally (at least 75 per cent) to the practice of radiology or one of its branches.
5. That he is a citizen of the United States or Canada. Candidates from other countries must be permanent residents of that country and native citizens thereof.

GENERAL PROFESSIONAL EDUCATION

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. If the applicant is a resident of the United States or one of its possessions and is a graduate of a medical school outside the United States or Canada, he must have a certificate of The National Board of Medical Examiners.
2. Completion of an internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(Applicable to candidates who begin their training on or after January 1, 1942, and to all candidates examined after January 1, 1945.)

1. After completion of the internship there shall be a period of special training in radiology of not less than three years in clinics, hospitals or dispensaries recognized and approved by The American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as

competent to provide a satisfactory training in radiology. This period of specialized training shall include:

(a) Graduate training in pathology, radiation physics and radiobiology.

A period of six months full-time training in pathologic anatomy is recommended but where this is not possible to arrange the student, during his three-year training period may, by attending pathologic conferences, postmortem examinations and studying removed tissues, receive adequate training in pathology. It is recommended that radiation physics be taught by a combination of didactic lectures, practical examples, and direct clinical demonstrations.

(b) An active experience (residency) of not less than twenty-four months in an institution, the radiologic department of which is recognized and approved by The American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as capable of providing satisfactory training.

(c) Examination in the basic sciences of radiology as well as the clinical aspects thereof.

These examinations should be given by the student's instructors in order to allow those responsible for his training to certify to the board that he is adequately prepared.

In the current emergency the board will allow one year of military service spent in a radiology department in the United States Army, Navy or Marine Corps to be applied toward the satisfaction of one year of graduate training.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologc literature, his membership in medical societies, and his local and general reputaton.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs, and the fee of $50, at least two months before the date of the examination.

FEE

A fee of $50 must accompany each application blank. This fee will not be returned and no application will be considered until the fee is received. This fee has been carefully computed nd is used entirely for administrative purposes. Members of e board and special examiners do not receive any compensa- n except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

Checks should be made payable to the American Board of Radiology.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in the first examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination, and pay an additional fee of $25. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $50.

A candidate having failed twice may, after one year has elapsed, file a new application which must be accompanied by the fee of $50.

FINAL ACTION OF THE BOARD

The final action of the board is based on the applicant's professional record, training, and attainments in the field of radiology, as well as on the results of his examination. Any radiologist who is practicing radiology honorably and efficiently should have no difficulty in obtaining a certificate. This board has been organized, not to prevent qualified radiologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of radiology.

REVOCATION OF CERTIFICATES

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-Laws. According to Article IX, Section 4, of the By-Laws "Any certificate issued by the Board of Trustees shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to or in violation of any provision of the Certificate of Incorporation of this the American Board of Radiology or of these By-Laws; or

(b) The physician or party so certified shall not have been eligible in fact to receive such certificate; or

(c) The physician or party so certified shall have made any misstatement of fact in his application or in any other communication to the board or its representatives; or

(d) The physician or party so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Trustees, moral turpitude; or

(e) If the physician or party so certified shall have had his license to practice medicine revoked or shall have been expelled from one of the societies or organizations which is represented by this corporation through eligibility of such society or organization to nominate and appoint members of this corporation."

All official correspondence should be addressed to the secretary.

AMERICAN BOARD OF SURGERY

Fordyce B. St. John, Chairman, New York.
Samuel C. Harvey, Vice Chairman, New Haven.
J. Stewart Rodman, Secretary-Treasurer, 225 S. Fifteenth Street, Philadelphia 2.
William DeW. Andrus, New York.
Isaac A. Bigger, Richmond, Va.
Edward D. Churchill, Boston.
Warren H. Cole, Chicago.
Warfield M. Firor, Baltimore.
Howard K. Gray, Rochester, Minn.
Robert M. Moore, Galveston, Texas.
Frederick L. Reichert, San Francisco.
Calvin M. Smyth Jr., Philadelphia.
Nathan Womack, St. Louis.

(The American Board of Surgery is preparing a new and revised edition of its Booklet of Information which will be available for distribution by the board after Sept. 1, 1947. The revision was not available for publication in this issue of The Journal. The American Board of Surgery, however, submitted the following statement for inclusion in this number.)

Candidates who have the following requirements will be eligible for consideration by the American Board of Surgery:

Group I: Four years of education in surgery in a graded residency in one or more institutions. (A graded residency includes a period of training in which the trainee has increasing responsibility for the care of patients with surgical conditions.) The training programs of hospitals must be approved by an appropriate committee of the board, in addition to the approval of the hospital for graduate training by the Council on Medical Education and Hospitals of the American Medical Association or the American College of Surgeons. One year of the four may be in a subspecialty of surgery, such as proctology, thoracic surgery, plastic surgery, cancer surgery, orthopedics, gynecology, or experimental surgery. If the second year of a two year internship is surgical and in a hospital approved for graduate training, it will be acceptable on the above four years.

Group II: In lieu of the requirements for Group I, the board will continue to accept, for the present, three years of acceptable residency training, followed by two years of study or practice of surgery. The latter two years may be taken under one certified by the board and acceptable for this purpose to the board and carrying on his practice in hospitals fully approved as meeting the minimum hospital requirements of the American College of Surgeons.

In addition to the above groups, those candidates whose applications are now on file in the board's office and candidates with whom the board has had correspondence and whose training programs to this date have met the board's requirements, will be given consideration. After this date, no candidates will be accepted who do not meet the requirements as published in Groups I or II.

The new Booklet of Information of the American Board of Surgery will be ready for mailing about September 1. Requests for a copy of the booklet should be mailed to the board's office.

AMERICAN BOARD OF UROLOGY

GILBERT J. THOMAS, President, Minneapolis.
CLARENCE G. BANDLER, Vice-President, New York.
HARRY CULVER, Secretary-Treasurer, 210 Loring Medical Building, 1409 Willow St., Minneapolis 4.
GEORGE GILBERT SMITH, Brookline, Mass.
GEORGE F. CAHILL, New York.
E. GRANVILLE CRABTREE, Boston.
CHARLES C. HIGGINS, Cleveland.
A. I. DODSON, Richmond, Va.
GRAYSON CARROLL, St. Louis.

ORGANIZATION

The American Board of Urology was organized at Chicago, Ill., Sept. 24, 1934. The committee members present from the American Association of Genito-Urinary Surgeons were: Dr. William F. Braasch, Dr. Henry G. Bugbee, and Dr. Gilbert J. Thomas; those from the American Urological Association were Dr. Herman L. Kretschmer, Dr. Nathaniel P. Rathbun, and Dr. George Gilbert Smith; those from the Section on Urology of the American Medical Association were: Dr. Clarence G. Bandler, Dr. A. I. Falsom, and Dr. T. Leon Howard.

The officers of the board elected at this meeting were: Dr. Herman L. Kretschmer, President; Dr. Clarence G. Bandler, Vice-President; Dr. Gilbert J. Thomas, Secretary-Treasurer.

The board was incorporated May 6, 1935, and held its first legal meeting May 10, 1935.

PURPOSES

The first objective of the American Board of Urology, Inc., is to render better service to the public by insuring the competency of any physician or surgeon who is specializing, or who wishes to specialize, in the field of urology. The board will elevate the standards and advance the cause of urology. It will investigate the curricula of medical schools and will encourage adequate facilities for graduate instruction in urology.

FUNCTIONS

1. The board will arrange and conduct examinations testing the qualifications of volunteer candidates.
2. The board will grant and issue to physicians duly licensed by law, certificates or other equivalent recognition of special knowledge in urology; and revoke the same.
3. The board will endeavor to serve the public, hospitals, medical schools, medical societies and practitioners of medicine and surgery by preparing lists of urologists whom it has certified.

LIMITATIONS OF FUNCTIONS

The conferring of degrees, "Doctor of Medicine" or "Bachelor of Medicine" remains with the universities, where it belongs, and this board makes no attempt to control the practice of urology by license or legal regulations. This board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician.

REASON FOR APPLYING FOR A CERTIFICATE; ITS VALUE

The American Urological Association, the American Association of Genito-Urinary Surgeons, and the Section on Urology of the American Medical Association are interested in furthering the cause of urology and have participated in the formation of this board. They are sponsoring its activities. The various national medical societies, the public, hospital directors and others will utilize the certification from this board as a means of discriminating between those well grounded as specialists in urology and those who are not.

Lists of individuals who have certificates from this board, and who are engaged in the practice of urology, are published in the Directory of the American Medical Association (signified in biographical data by symbol, "A.B.6"); in a handbook issued from time to time by the American Board of Urology, Inc., and in the Directory of Medical Specialists, published by the Advisory Board for Medical Specialties.

Application for this certificate is purely voluntary. There is only one type of certificate. No special marking or printing appears on the certificate which may identify diplomates who have or have not taken all or part of the examination. *All certificates are identical.*

The Advisory Board for Medical Specialties working in conjunction with, and reporting to, the Council on Medical Education and Hospitals of the American Medical Association, has set certain standards of preparation for specialization which the American Board of Urology, Inc., wishes to adopt. The Advisory Board has drawn from the experience of all the present functioning boards and has been of inestimable assistance in the formulation of the Constitution and By-Laws for the Board of Urology.

APPLICATION BLANK; REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special form. This will be provided by the secretary and must be returned to him, accompanied by other required data and credentials and by $35 of the examination fee.

REQUIREMENTS FOR APPLICANTS

Each applicant, before he shall become eligible to take the examination for certification in urology, must:

A. Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, and must have completed an internship of not less than one year in a hospital approved by the same council. (The former requirement is not applicable to a candidate who graduated from an institution now extinct, or whose graduation occurred before the American Medical Association had prepared a list of accredited medical schools.) All graduates of foreign medical schools must obtain a license in the state in which they propose to practice medicine and the certificate of the National Board of Medical Examiners before making application for certification.

B. Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology.

The board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression "special training in Urology" may be interpreted to include:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of urology.

This period of specialized preparation should include:

(*a*) graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty of Urology.

(*b*) an active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the diagnosis and treatment of urologic conditions.

(*c*) examinations in the medical sciences basic to the specialty of Urology, as well as in the clinical, laboratory and public health aspects.

2. An additional period of not less than two years in the practice of urology in the city from which he makes application.

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association.

C. Make application to the American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character;

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged;

E. Membership in the American Medical Association, or comparable national medical association is recommended.

FEE

The examination fee is $100. (This fee will be increased when the expense of the examinations and other activities of the board demand.) Thirty-five dollars must accompany the application. If, on investigation, an applicant is found lacking in any of the requirements stated above, he will be notified that he is ineligible for examination. Sixty-five dollars must be paid when the applicant is accepted as a candidate for certification. Neither fee shall be returnable in any event.

If a candidate fails, he will be permitted a second examination after one year or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application and pay a second fee.

REQUIREMENTS FOR CERTIFICATION

According to the By-Laws of the American Board of Urology, Inc., applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary.

The requirements for certification include: personal appearance before the board; preparation of reports of fifty major urological cases, under the candidate's own supervision, which must contain all items essential for diagnosis, therapy, prognosis, results of treatment, etc.; oral-clinical examinations, and written examinations.

In specific instances the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations and an appointment for his personal appearance before the board.

EXAMINATIONS, WHERE HELD, CHARACTER OF, AND REPORTS OF CASE HISTORIES

The board will hold one examination per year. This may be held in association with the annual meetings of the American Urological Association or the American Medical Association, when this is practicable, or at other times and places that the board may select or deem expedient.

The written examinations are designed to test the candidate's preparation in, and his knowledge of, the whole field of urology, including the fundamental subjects: pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology. These may be given at the time of the oral-clinical examination or may be held on certain dates simultaneously in different parts of the country at places convenient for candidates. The examination in pathology will consist of the identification of gross specimens and of sections of tissue served through the microscope. The examination in anatomy, ology, embryology, bacteriology, physiological chemistry endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology.

The oral-clinical examination will consist of discussions of common urological conditions. The subjects forming the basis of this examination are: urography; diseases of the genital organs, including the prostate; diseases of the urinary bladder, and diseases of the ureters and kidneys. The examination may deal directly with data found in the reports of case histories that the candidates have submitted. It will ascertain the candidate's familiarity with recent literature, the breadth of his clinical experience, and his general qualifications for practice in he specialty of urology.

The professional adaptability of each candidate will be investigated in an attempt to determine his ethical conduct and his attitude toward his patients and fellow practitioners.

The reports of fifty major urological cases must be consecutive and must have been under the candidate's own supervision. They must not be abstracted. Sufficient data should appear in these so the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made.

Case reports that are copied verbatim from a hospital record are not accepted. They must be identified by the name of the hospital and the case admission numbers, with the pertinent dates. The reports must be typewritten on 8½ by 11 paper and in duplicate, but need not be on any special forms.

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and the treatment prescribed.

The board requires that all of the essential points of the history and examination, as well as a complete description of the surgical procedure shall be given. Emphasis should be placed on the following items: Preoperative diagnosis, clinical and pathological diagnosis, laboratory data, including cultures of urine and chemical analysis of calculi; summary of postoperative course with special reference to morbidity, clinical findings at time of discharge from the hospital and subsequent "follow-up" reports.

A final short paragraph must be prepared for each case. This must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists must accompany the reports. If the reports are obtained from more than one hospital they must be consecutive and a separate index list of each group should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number, and the dates of operation. Statements from the superintendents of the hospitals, attesting that the candidate was the operator must be included. The lists will be filed in the secretary's office for verification purposes.

Each candidate must assume personal responsibility for the data in his case reports, including autopsy findings and interpretation of urograms.

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his competence as an urologist.

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination. If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others.

Case reports must be submitted to the secretary of the board at least ninety days before the time set for the oral-clinical examination.

FINAL ACTION OF THE BOARD

Final action is based on the applicant's training, his professional record, his attainments in the field of urology, and the results of the examination. Any well trained urologist will have no difficulty in obtaining the board's certification. This board is organized not to prevent qualified urologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of urology.

The activities described above proceed from the certificate of incorporation in which is stated the nature of the business, objects, and purposes proposed to be transacted and carried out by this corporation.

REVOCATION OF CERTIFICATE

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-Laws. According to Article IX, Section 4, of the By-Laws, "each certificate shall be subject to revocation in the event that:

"(*a*) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to, or in violation of, any provision of the Certificate of Incorporation of this, the American Board of Urology, Inc., or of the By-Laws; or

"(*b*) The physician or party certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to, or could have been ascertained by, the directors of the board at the time of the issuance of such certificate; or

"(*c*) The physician or party so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representatives; or

"(*d*) The physician so certified, at any time while continuing to practice, shall cease to practice urology; or

"(*e*) The physician so certified shall at any time have neglected to maintain the degree of competency in the practice of the specialty of urology as set up by the board, and shall refuse to submit to reexamination by the board.

"The Board of Trustees of this Corporation shall have the sole power, jurisdiction and right to determine and decide whether or not the evidence or information before it is sufficient to constitute one of the grounds for revocation of any certificate issued by this corporation. The Board of Trustees may, however, in its discretion, require any physician so certified to appear before the Board of Trustees or before any one or more of them or before any individual or individuals designated by the Board of Trustees, on not less than twenty days' written notice, and to show cause, at the time and place specified in such notice, why his certificate should not be revoked on any one or more of the above-described grounds specified in such notice. The failure of any physician so notified to appear as required in such notice, without due excuse deemed sufficient to the Board of Trustees, shall constitute, ipso facto, cause for revocation of his certificate. The decisions of the Board of Trustees relating to all matters under this Section 4 shall be final and binding."

Checks should be made payable to: "The American Board of Urology, Inc."

Communications should be addressed to the secretary-treasurer.

ADVISORY BOARD FOR MEDICAL SPECIALTIES

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L. R. Chandler, Vice President, San Francisco.
B. R. Kirklin, Secretary-Treasurer, 102-110 Second Ave., S.W., Rochester, Minn.
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FOREWORD

The Advisory Board for Medical Specialties has prepared this booklet for the purpose of furnishing general information regarding its activities in connection with graduate medical education and the certification of medical specialists in the United States and Canada. It is designed also to give detailed information concerning the procedure to be followed by examining boards in the various specialties in order to obtain membership in this Advisory Board and official recognition by the Council on Medical Education and Hospitals of the American Medical Association. This information is based in large part on the experience of previously formed boards during the past twenty-five years.

ORGANIZATION

This Advisory Board was organized in 1933-1934 to coordinate graduate education and certification of medical specialties in the United States and Canada.

Several specialty boards had been functioning actively and successfully for a number of years prior to the organization of the Advisory Board for Medical Specialties. Their purposes were, primarily, to establish minimum standards of graduate educational and training requirements for physicians representing themselves to the public as being specialists, with certification by the boards of candidates after they had been able successfully to pass the boards' examinations. Secondarily, these boards hoped to improve the general standards of graduate medical education and facilities for special training. This aim is being steadily and rapidly accomplished.

Credit for the improvement in undergraduate medical education, so noticeable in this country during the past thirty years, is due to the efforts of universities, educational foundations, medical schools, medical societies, and to public support along these lines. The same is true of the present transition in graduate education in the specialties, sharply stimulated by the establishment and activities of these certifying boards.

The American Board of Ophthalmology was the first special certifying board to be created in 1916; the American Board of Otolaryngology, established in 1924, was followed by the American Board of Obstetrics and Gynecology in 1930, and the American Board of Dermatology and Syphilology in 1932.

During part of this period of time plans for the organization of similar boards in other specialties were being actively projected, all of these groups being desirous of availing themselves of the experiences of the already existing boards.

It was soon recognized that some formal and official plan of organization must be established. It was clearly essential that an examining board must have the official sanction of the national societies in its given specialty as well as that of its section of the American Medical Association, but there was, at that time, nothing to prevent unofficial groups from organizing examining boards and using the title American Board.

Consequently, in order to avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups into a concise and homogeneous plan for betterment, it was deemed advisable to create an Advisory Board which should give consideration to those problems common to all, and which should be representative of each organization concerned.

During the years 1933 and 1934 this Advisory Board was organized and began actively to function. Simultaneously at the Milwaukee session of the American Medical Association in 1933 a resolution was adopted authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration based in general on those of the American Boards of Ophthalmology, of Otolaryngology, of Obstetrics and Gynecology, and of Dermatology and Syphilology and, (2) to recognize officially new boards meeting these standards, this recognition to be based upon previous approval and recommendation to the Council by the Advisory Board.

A constitution and by-laws for the Advisory Board was adopted at a meeting in Chicago on February 11, 1934. The original member organizations of the Advisory Board for Medical Specialties were: the Association of American Medical Colleges; the American Hospital Association; the Federation of State Medical Boards of the U. S. A.; the National Board of Medical Examiners; the American Board of Ophthalmology, founded 1916; the American Board of Otolaryngology, founded 1924; the American Board of Obstetrics and Gynecology, founded 1930; and the American Board of Dermatology and Syphilology, founded 1932. Two representatives were appointed from each of these organizations to serve on the Advisory Board. Since that time the American Board of Pediatrics (1934), of Psychiatry and Neurology (1934), of Radiology (1934), of Orthopaedic Surgery (1935), of Urology (1935), of Internal Medicine (1936), of Pathology (1936), of Surgery (1937), of Anesthesi-

ology (1938), of Plastic Surgery (1938), and of Neurological Surgery (1940) have been properly organized, approved, and elected to membership in the Advisory Board and recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. There are, therefore, fifteen examining boards now organized, approved and actively functioning in the fifteen specialties recognized as suitable fields for the certification of specialists.

The work of this board has been aided by grants from the Josiah Macy Jr., Foundation of New York, but the board is now supported by its component groups.

PURPOSE

Article II of the Constitution states that, "This board shall act in an advisory capacity to such organization as may seek its advice concerning the coordination of the education and certification of medical specialists." Specifically, this represents an official effort to advance the standards and improve the methods of graduate education and training in the medical specialties, with certification of men thus educated and trained who qualify as specialists in the various branches. The common interest of the member organizations in these purposes is obvious. It is equally apparent that some fixed definition of specialties needed to be established, preferably on a graduate educational basis, that minimum standards of organization and conduct for new examining boards should be fixed, and that some official method of recognition be developed.

There is no desire on the part of these boards to interfere with any practitioners of medicine in any of their regular or legitimate activities. Their fundamental purpose is to ensure to the public, both lay and medical, and for its protection, that physicians claiming to be specialists with presumably special proficiency in one or another branch of medicine actually possess the qualifications they claim. This presupposes special training and demonstrable capability along certain lines of work. Suitable evidence of this is the ability of an individual to satisfy an examining board about his training and then to pass the examination for certification.

Surveys of existing facilities for graduate training in the various specialties are being conducted at the present time; residencies as well as preceptorship and assistantship training are being studied; preparations for stimulating medical school and hospital facilities for the required graduate training are going forward actively; round table conferences furnish discussions of subjects of interest in regard to graduate medical education.

The Council on Medical Education and Hospitals of the American Medical Association has agreed, under the authority vested in it by the resolution passed at the Milwaukee meeting (1933) and referred to above, that applications of special examining boards for official approval are to be referred to the Council through the Advisory Board for Medical Specialties, recommendation by the Advisory Board for such approval to be based upon the standards mutually adopted. The understanding exists that the Council cannot be bound by recommendations of the Advisory Board but will consult the Advisory Board of Medical Specialties before acting on any application so long as mutually adopted standards are in force.

Early in 1940 there was published the first edition of the Directory of Medical Specialists containing the names and biographic data of all men certified by the several specialty boards, as well as information regarding the organization and *functions of these boards. The third edition (1946)* carries the names and medical biographies of 24,028 diplomates of the fifteen specialty boards.

In response to the generally recognized need for a clear formulation of the educational problems and principles involved in graduate and postgraduate medical training, the Advisory Board at its meeting in June 1937 voted to create a Commission on Graduate Medical Education to study the various aspects of the whole problem. This commission included representatives of the profession, the specialties, the universities, the hospitals, and the licensing bodies. The report of this commission comprising 304 pages appeared in 1940, published by the University of Chicago Press, and is of real assistance to the various specialty boards, hospitals, medical schools, and regulatory bodies dealing with this phase of American medicine.

MEMBERSHIP

The Advisory Board is composed of two representatives from each of the approved examining boards in the medical specialties and such other national organizations as are interested in education, examination, and certification of medical specialists and duly elected to this body.

The Constitution provides that, "To be eligible for representation in this board an examining board in a specialty must be composed of members elected from or appointed by societies recognized by this board as a national society in that specialty together with representation from the related section of the American Medical Association." On being accepted by the Advisory Board, the board in question is recommended to the Council on Medical Education and Hospitals of the American Medical Association as qualified for recognition. Membership in the Advisory Board provides for the inclusion of the name of the organization in all lists and directories published by the Advisory Board for Medical Specialties and provides *also for publication of the names of specialists certified* by each individual examining board.

This board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association, and with the Advisory Council on Medical Education.

Meetings of the Advisory Board for Medical Specialties are held annually as required.

Traveling and other expenses of representatives in attendance are borne by member organizations.

SUGGESTIONS TO NEW BOARDS SEEKING APPROVAL

I. *ORANIZATION*

1. A special examining board to be approved by the Advisory Board for Medical Specialties should represent a recognized and distinct specialty of medicine. (It is agreed between the Council and the Advisory Board that no board shall be organized in a special field having less than one hundred members engaged in special practice in the United States.)

2. It should be composed of representatives of the national organizations in that specialty including the related section of the American Medical Association.

3. It should be incorporated.

4. A special board should:

(a) Determine whether candidates have received adequate preparation.

(b) Provide a comprehensive test of the ability and fitness of such candidates.

(c) Certify to the competence of those physicians who have satisfied its requirements.

II. DEFINITION OF SPECIAL FIELDS

The following branches of medicine at present are recognized as suitable fields for the certification of specialists.

1. Internal Medicine
2. Surgery
3. Pediatrics
4. Obstetrics and Gynecology
5. Ophthalmology
6. Otolaryngology
7. Dermatology and Syphilology
8. Psychiatry and Neurology
9. Urology
10. Orthopaedic Surgery
11. Radiology
12. Pathology
13. Neurological Surgery
14. Anesthesiology
15. Plastic Surgery

III. QUALIFICATIONS OF CANDIDATES

Each applicant for admission to the examination should be required to present evidence that he has met the following standards:

A. General Qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies should not be required. (Exceptions to the foregoing may now be made at the discretion of any individual board for good and sufficient reasons.)

B. Professional Qualifications.

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.

2. Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same Council.

C. Special Training.

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council and respective specialty board as competent to provide a satisfactory training in the special field of study.

2 This period of specialized preparation should include:

(a) Graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the specialty in question

(b) An active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council and respective board as competent in the specialty.

(c) Examination by the respective board in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects

3 An additional period of not less than two years of study and/or practice

These essentials were adopted by the Advisory Board for Medical Specialties June 10, 1934 and have had only minor changes since then They are practically identical with an outline of Essentials for Approved Examining Boards in Specialties adopted June 10, 1934 by the Council on Medical Education and Hospitals of the American Medical Association and ratified June 11, 1934 by the House of Delegates of the American Medical Association

ORGANIZATION OF EXAMINING BOARDS

The foregoing essentials for approved special examining boards were followed in the organization of the existing boards

Official sponsorship of the national societies, and the related section of the American Medical Association, in a specialty organizing an examining board, has included the election or appointment of representatives from each of these national societies to serve on the board as examiners and directors

· Each board was or is incorporated Each application for organization and approval included.

1 The name of the proposed board

2 A statement of its method of organization, the sponsoring societies, its list of officers, and the names and addresses of the elected or appointed members of the board, including the societies which each represents

3 A copy of the tentative constitution and by-laws

4 A copy of its proposed articles of incorporation

5 An outline of qualification requirements for applicants

6 Approximate number of institutions offering residency training in the specialty and total number of residencies available.

7. An outline of proposed methods of examination.

8 A copy of the application blank

9. Any general information or statement of importance

10 Approximate number of physicians practicing the specialty which the board represents

These data are submitted in duplicate to the office of the Secretary of the Advisory Board for Medical Specialties

An application for election to membership in the Advisory Board and the data listed above are referred immediately for review by the Committee on Standards and Examinations of the Advisory Board On approval by the committee incorporation is then completed and a statement of this filed with the secretary Action on the application will be taken at the succeeding meeting of the Advisory Board for Medical Specialties and each examining board as elected will be recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition One of the two sets of data submitted is forwarded to the Council on Medical Education and Hospitals of the American Medical Association with the Advisory Board's recommendations Examination and certification of applicants in the specialty may begin immediately when the special board is given such approval

Communications should be addressed to the secretary

CONSTITUTION AND BY-LAWS

Adopted at Organization Meeting, February 11, 1934

Article I

Name

The name of the organization shall be "The Advisory Board for Medical Specialties"

Article II

Purpose

This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists N action taken by this Board shall be binding upon any member organizations

Article III

Membership

Section I

This board shall be composed of two representatives from each of the examining boards of the medical specialties and such other national organizations as are interested in education, examination, or certification of medical specialists

Section II —Original Membership

At the time of the organization, this board shall be composed of representatives from each of the following bodies

American Board of Ophthalmology
American Board of Otolaryngology
American Board of Obstetrics and Gynecology
American Board of Dermatology and Syphilology
Association of American Medical Colleges
National Board of Medical Examiners
Federation of State Medical Boards
American Hospital Association
Council on Medical Education and Hospitals of the American Medical Association

Section III—Additional Membership

To be eligible for representation in this board an examining board in a specialty must be composed of members elected from or appointed by societies recognized by this board as national societies in that specialty together with representation from the related Section of the American Medical Association Upon being accepted by this Advisory Board the board in question will be recommended to the American Medical Association as being qualified for recognition by that Association

Section IV—Quorum

A quorum at any meeting shall consist of a majority of the official representatives to the board and at least one third of the membership organizations shall be represented Each member organization shall be entitled to two votes

Article IV

Officers and Standing Committees

Section I—Officers

The officers of this board shall be (a) President, (b) Vice President, (c) Secretary Treasurer. *These officers shall be elected at the annual* meeting each year.

Section II—Standing Committees

The standing committees shall be as follows:

1. The Executive Committee
2 Standards and Examinations
3 Finance

The Executive Committee shall consist of the President, Vice President, Secretary Treasurer, and two members elected at the annual meetings No organization should have more than one member on the Executive Committee The President shall be the Chairman of the Executive Committee. The other standing committees shall be appointed by the President.

Article V

Amendments to the Constitution

Amendments to this constitution may be made by a majority vote of the official representatives present at any annual meeting provided that thirty days' notice of the proposed amendment has been given each member of the board

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BY-LAWS

Article I

Duties of Officers

Section I

The President shall preside at all meetings of the board, shall act as Chairman of the Executive Committee, and shall appoint all other standing committees He shall call meetings of the Executive Committee at such time and place as may be deemed necessary

Section II

The Vice President shall assume the duties of the President in his absence

Section III

The Secretary Treasurer shall perform the usual duties of this office

Article II

Executive Committee

The Executive Committee shall carry out the policies and activities decided upon by the board It shall have *ad interim authority to initiate* policies subject to approval by the board at the annual or any special meeting The two elected members shall serve for two years, the terms of office terminating in alternate years

Article III

Meetings

Section I

There shall be an annual meeting at such time and place as the board may determine A special meeting may be called by the president upon ten days' notice to all members stating time, place and purpose of such meeting The Executive Committee may present other business for consideration

Section II

The Executive Committee shall meet subject to the call of the President

Section III

Robert's Rules of Order shall be followed except where they conflict with this Constitution and By Laws

Article IV

Amendments to the By Laws

Amendments to these by laws may be made at any regular or special meeting of the board

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SATURDAY, AUGUST 16, 1947

TRENDS IN MEDICAL EDUCATION

In this issue of The Journal the report of the Council on Medical Education and Hospitals reveals several trends in the field of medical education. Topics that need special comment are the continuation of the accelerated program, the number and academic performance of veteran medical students, the number of women students, premedical requirements, admission policies and the development of new medical schools.

Early in 1946 most medical schools decided to discontinue the accelerated program adopted during the war and have now practically completed reconversion to prewar schedules. Seven of the four year schools, however, are continuing an accelerated schedule for all classes. Acceleration is required of all students in four of these schools and is voluntary in the other three. Many educators have felt that the numerous other difficulties that surrounded medical education during the war made it impossible to assess accurately the merits of the accelerated schedule. The experience under peacetime conditions of the seven schools that are continuing acceleration should provide valuable information for a more reliable appraisal of this educational experiment.

Veterans already comprise well over one half of the students enrolled in our medical schools. Only the 1946-1947 junior class had more nonveterans than veterans, and in that class the veterans were outnumbered by only 2.2 per cent. In next year's freshman class veterans will number over 70 per cent. From his performance in the 1946-1947 freshman class, it appears that the veteran is a somewhat better student than either his nonveteran classmates or the freshmen of prewar years.

During the past three years the number of women studying medicine in this country has almost doubled. In 1946-1947 women comprised 9.1 per cent of the total enrolment in the medical schools of the United States, an all time high. The highest percentage of women, 11.1, was in the freshman class. Present figures would indicate that in 1947-1948 somewhat fewer women will be counted among the entering students, although the estimated figure of 9 per cent is well above prewar levels.

During the war most schools lowered by a year or more the period of college training required of candidates for admission. There is now a distinct trend toward the reestablishment of the prewar requirements. Of the eighty-seven medical and basic science schools in the United States and Canada, seventy-five now require three or more years of premedical work. In some schools veterans may be admitted after a shorter period of college training.

A study of the geographic source of the students in the 1946-1947 freshman class reveals that a trend may be developing for medical schools, particularly those that are tax supported, to restrict admission to residents of the state or community in which they are located. If a definite trend in this direction occurs it may lead to unfortunate consequences for the individual schools and for medical education in general. Such a practice would result in a school's losing a number of outstanding students because they happened to be nonresidents, and it would also narrow the scope of the school's influence and support. Another evil would be to encourage the development of schools in states that are not in a position to establish and maintain acceptable medical schools. University administrators, public officials and others who have the authority to determine admission policies must be urged to maintain a long range view and not be stampeded by immediate pressures into adopting harmful expedients.

An expansion of the facilities for medical education in this country seems certain to occur during the next several years. One new medical school opened during the past year, and funds for initiating a building program were appropriated for another. Several basic science schools are considering expansion to a four year program, and plans for establishing several new medical schools are under discussion.

New medical schools, properly sponsored and with adequate financial support and access to the necessary amount of clinical material, are healthy developments in medical education. The new ideas and new opportunities that such institutions contribute have a real value. However, the development of a new medical school is a major undertaking that should not be started until it is clear that the requirements for establishing and maintaining an acceptable medical school can be fully met.

FINANCING MEDICAL EDUCATION

The cost of operating the medical schools of this country, exclusive of their teaching hospitals, will be somewhat more than $43,000,000 for the academic year 1947-1948 Less than one third of this sum will be obtained from student fees. The fact that during the coming year medical schools will receive more than $31,000,000 from endowments, general university funds, gifts and tax sources is good evidence of the determination of university administrators, trustees and legislators to continue to provide a program of high quality in the field of medical education. That such a policy results in a rich return to the people in health, happiness and economic productivity has been demonstrated by experience.

It is important, however, to point out that at least one fourth of our medical schools are still operating on grossly inadequate budgets and that the efforts of many more schools are limited by budgets that are but slightly less inadequate. The solution to the problem of how to increase the financial support of medical education is being urgently sought in many quarters

During the coming year medical school budgets will be supplemented by grants totaling about $10,000,000 from foundations, governmental agencies and other extra-university sources Relatively few of these grants are designed primarily to strengthen educational programs The majority are awarded for the prosecution of specific research problems

It cannot be denied that many grants for research benefit the educational activities of the institutions receiving them However, the question could be raised as to whether the fundamental cause of medical education and medical science would not be better served if more grants were available for the specific purpose of helping schools strengthen their educational activities

Those responsible for establishing and awarding grants should consider this problem. Medical schools and other educational institutions are having increasing difficulty in securing large unrestricted gifts or additions to endowments This situation may well make advisable a modification of policy in disbursing such funds as have already been accumulated by foundations and other agencies for the purpose of furthering medical science.

A policy of giving more direct financial support to the educational activities of medical schools can be fully justified Since effective research is the product of trained minds whose scientific curiosity has been stimulated, it is reasonable to believe that a greater investment by foundations and similar groups in improving the fundamental training of physicians as a class will ultimately bring a much larger return in scientific knowledge and scientific practice than will the expenditure of funds almost exclusively in support of the special activities of a few selected investigators

MEDICINE IN BRAZIL

Brazil is a country of amazing contrasts. Side by side the most modern and advanced in the science of medicine and in the practice of sanitation struggle against the lassitude of the tropics Hundreds of young men trained in the highly technical procedures of medicine in the institutions of North America endeavor with courage and sacrifice to overcome the imperturbable self-satisfied tradition of obsolete European technics of medical teaching and practice A score of medical societies, each with a few hundred members, waste the intellect and energies of their leaders in strife for individual political preferment; thus they remain ever subservient to varying governmental powers, when a consolidated medical opinion might speak with a voice to which government would listen

There are eleven medical schools in Brazil, of which not more than a few if any could qualify under the minimum standards established by the Council on Medical Education and Hospitals. The internship is practically unknown, although a few leading hospitals have established internships Schools of nursing are just beginning to be inaugurated; in many hospitals the family moves in with the patient to take care of his nursing. Tuberculosis constantly menaces the vast illiterate population, which includes between 70 and 80 per cent of Brazil's forty million people. Spitting is so common that even the newest hospital has special sputum basins in all the halls Tuberculosis of bones and joints and particularly of the spine is frequent The funds and institutions for its care are so inadequate to the need that most patients are subjected to fusion operations and a quick discharge from the hospital Apparently the majority of the patients who have had infantile paralysis come to scientific medical attention from two to ten years after their first paralysis, after deformity and distortion have reached their maximum Life expectancy for the population as a whole is quite certainly under fifty; but all the statistics relative to those outside the cities are subject to considerable doubt Heretofore most of the people have had misgivings about hospitals, conceiving of them as places to which one might be taken when in a morbid condition The postmortem examination in most institutions is virtually nonexistent Government is charged with graft, every evil of bureaucracy is exaggerated beyond belief; for instance, one hears that the great new hospital which does not open for three or four more months has already three hundred clerical employees on its permanent payroll Brazil has under twenty thousand physicians—probably fifteen thousand in practice—one doctor to three thousand people, great numbers of medical journals with maximum circulations around three thousand largely supported by uncontrolled advertisements. "Patent" medicines are sold without any apparent controls, and quick cures for syphilis are plugged on the radio. The newspapers are primitive, and even the one published in English carries solicitations by physicians. Any casual observer could multiply enormously these critical comparisons. Such destructive indictments, however, are little likely to lead to correction or advancement.

Through the office of the Institute of Inter-American Affairs vast benefit has already come to Brazil. Great areas have been freed from the menace of insect vectors of disease. Education of both the professions and the public in the fundamentals of hygiene and nutrition has been carried on with intelligence and good will. Since general provision of pure water, sewage disposal and similar public health projects is economically impossible, a beginning is made with safe wells and privies; the people in many areas have been quick to recognize their value and occasionally set up their own funds for extension of such projects. For this work there can be only encomium and a plea for its continuation and extension to the maximum of the means available.

The young men who have studied medicine in the United States need all the encouragement and help we can continue to give them after they return home to practice. Perhaps one or more generations will have to pass before the real significance of what they are doing will be recognized in their own country. In the meantime they battle against the status quo. The professorships in the medical schools are appointments made for life; the staff positions in most of the public hospitals are controlled by political influence; the small private hospitals are inadequate and commercial and subject to all the abuses that were only too well known in the United States during a similar period in our own evolution. Many of the young men trained in our own medical schools are reluctant to go into rural or frontier areas because of the lack of access to all the auxiliary medical services they used in the hospitals where they had their internships and residencies; a similar condition prevails in Brazil.

The extension of medical and public health projects from the United States to Latin America has served to introduce much of what is best in the medical science of the United States to millions of people who previously had little if any knowledge of the American way in medicine. Such movements as the Confederación Médica panamericana, the World Medical Association and the World Health Organization offer opportunity never previously available for emphasizing the international character of medical science and its leadership in promoting world peace.

THE INFLUENCE OF MEDICAL SCHOOLS ON GENERAL PRACTICE

Concern is being expressed in several quarters that too great a preponderance of recent graduates and students now in medical school are planning to become specialists and that not enough young physicians are interested in the practice of general medicine. It has been suggested that more discussion of the advantages and importance of general practice by the deans or other leaders in medical schools would result in more students being attracted to this field of medicine.

This question would seem to be part of the larger problem of providing medical students with more adequate information on the sociologic and economic aspects of medicine than has been done in the past. The fact that more and more medical schools are acknowledging this responsibility is definitely encouraging. It must be recognized, however, that many forces influence medical students in the choice of a career and that the point of view that a medical school fosters is only one of these forces.

Medical schools have also been urged to stimulate interest in general practice by encouraging their affiliated hospitals to develop internship and residency programs particularly designed to prepare men for the practice of general medicine. Several schools have already recognized the merit of this suggestion and are sponsoring such programs in their affiliated hospitals. Many who are close to the problem believe that, if more teaching hospitals would offer two year mixed or rotating services, a greater number of students would be encouraged to seek hospital appointments that would fit them for general practice.

The responsibility for the future of general practice falls on the public, the hospitals and the entire medical profession as much as it does on the medical schools. There is every reason to believe that the medical schools are prepared to take their share of the responsibility for preserving and strengthening this fundamental branch of medical practice.

Current Comment

THE POSTWAR RECORD OF MEDICAL EDUCATION

The statistics presented in the annual report of the Council on Medical Education and Hospitals on medical education in the United States and Canada reveal clearly the effectiveness with which medical education has adapted its activities to postwar needs. During the academic year 1946-1947 the total enrolment in the medical schools of this country was the second largest since 1905. The number of graduates, 6,389, was the largest reported for any single academic year since the Council on Medical Education and Hospitals was established. The number of freshmen enrolled was only 84 short of the largest freshman enrolment on record. From these figures it can be seen that the training and production of physicians is being maintained without interruption at the peak level of the effective capacity of our medical schools. This information should be of interest to veterans who have returned to their premedical studies and who have been concerned about a possible reduction in the opportunities for obtaining a medical education. Great efforts have also been exerted to provide opportunities for graduate study for veteran physicians desiring further training before entering practice. The number of approved residencies and fellowships in this country has been increased from 5,256 in 1941 to 12,003 in 1946-1947, an all time peak. Because of this expanded program the great majority of veterans have been able to secure within a relatively short interval after their separation from service opportunities for the additional training that they have desired. In considering the position of medical education in the postwar period, it should be observed that the average annual fee charged by medical schools in this country has increased only 21 per cent since 1940. This is a modest advance when compared with the increases in the costs of most other services and commodities during the same period. Thus, the record of medical education in fulfilling the demands of the postwar era can be favorably compared with the efforts and accomplishments of other groups in our society.

IMMUNIZATION WITH GAS GANGRENE TOXOIDS

Many attempts have been made to prepare immunizing agents against organisms of the gas gangrene group. In reporting the results of immunizing animals and human beings with gas gangrene toxoids, Tytell and his co-workers[1] state that potent toxin filtrates of Clostridium perfringens and Clostridium edematiens were used for the preparation of alum precipitated toxoids. These toxoids were tested on mice, guinea pigs, rabbits, goats, dogs and human volunteers and produced a measurable and protective titer of antibodies in animals. Good protection was obtained against multiple doses of toxin and bacterial culture. In animals protection was demonstrable against heterologous as well as homologous cultural strains. One dose of perfringens toxoid did not produce much rise in the antitoxin titers in human beings, but after two doses fairly good titers were evident in more than half. When a third dose was given three to nine months after the second, excellent titers were obtained in almost all of the human volunteers. Such titers were maintained for at least seven months. With perfringens toxoid good prospective titers were obtained with two doses, and excellent response after a third dose administered about four months after the second. Admixtures of the two toxoids were prepared. Good protective response to these mixtures was obtained in the experimental animals and in human beings after three doses. Reactions to these toxoids did not occur in the majority of volunteers. When they did they were as a rule not as severe as those produced by the alum precipitated toxoids of tetanus or diphtheria. These gas gangrene toxoids can be prepared on a commercial scale and have passed the safety tests outlined by the National Institute of Health.

SUCCESS AND FAILURE AMONG MEDICAL STUDENTS

Failure of a student to complete the medical curriculum successfully once he has entered medical school is wasteful in many respects. A recent analysis of psychiatric factors involved in the success or failure of medical students throws light on some factors involved in failure. Waggoner and Zeigler[1] tested 148 freshmen at the University of Michigan Medical School, using the revised Stanford Binet Form L, the Wechsler-Bellevue Adult Scale, the California Test of Mental Maturity, the Nelson-Denny Reading Test for High School and College Students, the Wrenn Study Habits Inventory, the Shipley-Hartford Retreat Test for Mental Deterioration and the Rorschach Examination. Of the 148, only 8 were dropped from medical school for academic failure, although 47 per cent incurred one or more grades of D. In addition, 9 students withdrew or dropped back one year for reasons of finance, health or poor grades. According to these investigators, no one test should be relied on to yield scores which can be trusted to predict academic success. Coordination of the results of more than one psychologic study with the results of the Rorschach Examination and adequate psychiatric interview when properly interpreted will yield information from which adequate selection of medical students can be made. In some, the psychologic studies show evidence of adequate intellectual ability in spite of which there is academic failure. In most such cases evidence of conflicting situations of one sort or another becomes apparent through psychiatric interview. Rorschach studies also frequently provide valuable information or leads which indicate the trend which should be taken by psychiatric interview. The most important factors in obtaining a satisfactory medical school record are of three types: (1) psychologic factors, such as intelligence, the ability to read rapidly and well, and vocabulary; (2) a personality structure which enables the students to sustain the emotional stresses associated with medical school work, and (3) a relative freedom from the situational stresses which produce conflict and reduce the student's efficiency. The Michigan investigators believe it advantageous to set an I. Q. limit of 130 on the Stanford Binet test merely because that is the dividing line between the lower and upper 80 per cent of students. They believe that the competition for students below the 130 will be severe both in medical school and after graduation. The single test most needed in this field, they believe, is one for motivation. A strong desire and interest in medicine is of great importance in satisfactory accomplishment both in school and thereafter. The importance of a reliable selection of students before entering the regular medical course is so obvious that a later follow-up of the students whose tests Waggoner and Zeigler summarize would be worth making and reporting.

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[1] Tytell, Alfred A.; Logan, Milan A.; Tytell, Alice G., and Tepper, Jack L.: Immunization of Humans and Animals with Gas Gangrene Toxoids, J. Immunol. **55**: 233 (March) 1947.

[1] Waggoner, R. W., and Zeigler, Thornton W.: Psychiatric Factors in Medical Students Who Fail, Am. J. Psychiat. **103**: 369 (Nov.) 1946.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Aug 13, 1947

President Truman Vetoes Proposed Science Foundation

Using a pocket veto, President Harry Truman killed the bill to create a National Science Foundation composed of twenty-four members who would have been appointed by the President Mr. Truman declared that the foundation as described in this plan would be complex and unwieldy and would impede rather than promote scientific research in this country Critics attacked the contemplated part time board on the ground that a part time body should not have control of all activities concerned with government aid to science President Truman was criticized by proponents of the measure. Senator T Alexander Smith, Republican of New Jersey, said that the President had "set back the cause of science" ten years through the veto He accused Mr. Truman of having made a "political football" out of "what undoubtedly would have been the greatest contribution made to this country by any Congress since the turn of the century."

Construction Costs Blamed for Revision of Veteran Hospital Plans

General Omar N Bradley, veterans administrator, announced that drastic design revisions would have to be made in seventy-three proposed multi million dollar veterans' hospitals because of spiraling construction costs As a result there will be up to six months delays on the projects General Bradley said he found evidence that contractors were adding a 15 to 30 per cent "fear contingency cushion" to active construction bids. He said "Either we must modify the desirable but nonessential features of a substantial number of structures on the drawing boards or we may require as much as 100 million dollars in additional funds."

Increase in Mental Institutionalization Attributed to Housing Situation

The housing shortage was cited as one reason why 17 per cent more persons are being institutionalized for mental diseases this year than last. Dr. Winfred Overholser, head of St. Elizabeths Hospital, explained that old age is often accompanied with mental disease due to senility. People usually care for their old folk when they have room, but, with the housing shortage, relatives are now more inclined to allow institutionalization of the senile. Other reasons for the increase are return of service men to new situations in civilian life, letdown in the war stimulation and more general recognition that early care is advisable in mental diseases.

Army Proposes to Make Greater Use of Scientific Talents

The War Department announced that it will revise its classification system so that trained scientists can be placed in positions where better use can be made of their knowledge. Surveys revealed that the armed services did not make full use of scientifically trained manpower in the last war. Forty-seven per cent of younger scientists considered their know how had been used only to small advantage or not at all, while 75 per cent of older scientists believed their talents had been adequately used in war work

Coming Medical Meetings

American Association of Medical Record Librarians, New York, Hotel Commodore, Sept. 7-12. Mrs Adaline Hayden, 18 E. Division St, Chicago, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 4-6. Dr. James R Bloss, 418 Eleventh St, Huntington 1, W Va, Secretary.

American College of Surgeons, New York, Waldorf-Astoria Hotel, Sept. 8-12. Dr. Paul B Magnuson, 40 E Erie St, Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2 6 Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr Karl S Richardson, 24 West Ohio St, Chicago, Business Manager.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary

Colorado State Medical Society, Denver, Shirley Savoy Hotel, Sept 17-20 Mr Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary

International Cancer Research Congress, St Louis, Hotel Jefferson, 2 7 Dr. Axel N Arneson, 510 S Kingshighway, St. Louis, Chairman Committee on Local Arrangements.

International College of Surgeons, U S Chapter, Chicago, Palmer House, Sept 29 Oct 2 Dr. Louis J. Gariepy, 16401 Grand River Ave, Detroit 27, Secretary.

Kentucky State Medical Association, Louisville, Sept. 29 Oct 2 D P E Blackerby, 620 S Third St, Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept 23 26 Dr L Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St, Quincy, Ill, Secretary.
Woolsey, 316 Atlas Bldg, Salt Lake City 1, Secretary.

National Medical Association, Los Angeles, Aug 18 22. Dr. John T Givens, 1108 Church Street, Norfolk 10 Va, Secretary.

Nevada State Medical Association, Reno, Sept 4 6. Dr. Moreton J. Thorpe, 17 N Virginia St, Reno, Secretary

Oregon State Medical Society, Portland, Sept 4 6 Dr. Thomas S Saunders, 1020 S. W. Taylor St, Portland 5 Secretary.

Pennsylvania, *Medical Society of the State of, Pittsburgh, Hotel William* Penn, Sept 15 18 Dr Walter F Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.

Southeastern Dermatological Association, Knoxville, Tenn, Hotel Andrew Johnson, Aug 31. Dr. A H. Lancaster, 608 W Main Ave., Knoxville, Secretary

Utah State Medical Association, Salt Lake City, Sept 11-13. Dr. Ray T. Woolsey, 316 Atlas Bldg., Salt Lake City 1 Secretary.

Vermont State Medical Society, Burlington, Hotel Vermont, Oct. 1-3. Dr Theodore H. Harwood, 128 Merchants Row, Rutland, Secretary.

Washington State Medical Association Seattle, *Olympic Hotel*, Sept. 28-Oct 1 Dr Harold E Nichols, 327 Cobb Building, Seattle, Secretary.

Western New York and Ontario Urological Society, Saranac, N. Y., Saranac Inn, Sept 3 6 Dr. Albert M Crance, 525 S. Main St, Geneva, N Y, Secretary

World Medical Association, Paris, France, Sept 17 20. Dr. Charles Hill B M A House, Tavistock Sq, London W C 1, England, and Dr. P Cibrie, 60 boulevard de Latour Maubourg, Paris 7e, France, Joint Secretaries

Medical Legislation

MEDICAL BILLS IN CONGRESS

National Science Foundation

The legislation proposing to establish a National Science Foundation, S 526, was passed by the Senate and House but was vetoed by President Truman August 6th This action of the President was predicated on the belief that the bill contained provisions which represent a marked departure from sound principles for the administration of public affairs *in that it would vest the determination of vital national policies, the* expenditure of large public funds, and the administration of important governmental functions in a group of individuals who would be essentially private citizens President Truman said that the Constitution places upon the President the responsibility for seeing that the laws are faithfully executed but that under the provisions of S 526, the President would be *deprived of effective means for discharging his constitutional responsibility* because full governmental authority and responsibility would be placed in 24 part time officers whom the President could not effectively hold responsible for proper administration Neither could the Director be held responsible by the President, for he would be the appointee of the Foundation and would be insulated from the President by two layers of *part time boards* President Truman *expressed the hope that the Congress* will reconsider this question and that it will enact a basically sound law early in its next session.

Army-Navy-Public Health Service Medical Officer Procurement Act of 1947

A bill sponsored in the Senate by the Senate Committee on Armed Services, S 1661, has passed the Senate and House, proposing to provide additional inducements to physicians, surgeons and dentists to make a career in the United States military, naval and public health services Under this bill commissioned medical and dental officers of the Army, Navy and Public Health Service will be given extra pay at the rate of $100 per month in addition to their base and longevity pay, except that officers commissioned in the medical and dental corps of the Officers' Reserve Corps, the Naval Reserve, the National Guard, the Army of the United States or medical and dental officers of the Reserve Corps of the Public Health Service will receive the increase only provided that within a period of five years they volunteer and be accepted for extended active duty of one year or longer and then only during periods of volunteer service Authority is also given the President to make original appointments to permanent commissioned grades, with rank not above colonel in the medical and dental corps of the Army and not above that of captain in the medical and dental corps of the Navy in such numbers as the needs of the services may require, the appointments to be made from qualified civilian doctors of *medicine* and dentists The *President* has approved this legislation.

GOVERNMENT SERVICES

ARMY

GENERAL BLISS INSPECTS HOSPITALS IN GERMANY

The Surgeon General of the Army, Major Gen. Raymond W. Bliss, has just returned from inspecting American military medical establishments in Germany. The Surgeon General has in mind setting up a residency training program for young American Army doctors now stationed in Germany which would be not only of value to the officers but of help in the increasingly serious German medical situation General Bliss pointed out that the U. S. Army has a hospital with 750 patients in the same immediate area in which is a German children's hospital with more than 500 patients. He feels that better advantage should be taken of the clinical opportunities present and that some kind of residency program should be worked out. There is in Germany apparently an extreme shortage of everything needed to care for the sick.

DEADLINE FOR REGULAR ARMY COMMISSIONS FOR NURSES

The War Department has announced that the time limit for applicants seeking Regular Army commissions in the Nurse Corps and the Women's Medical Specialist Corps has been extended to September 30. Applicants for the Regular Army Nurse Corps must be unmarried registered nurses with previous military service, have no dependents under 14 years of age, and be between the ages of 21 and 35 years of age. For commissions in the Medical Specialist Corps applicants must be in the 21 to 45 age group, unmarried and have no dependents under 14 years of age. Application forms may be secured at army hospitals, army headquarters, state and district nursing associations or from the Surgeon General's Office, Washington, D. C.

MORE NURSES NOMINATED FOR COMMISSIONS

President Truman sent to the Senate for confirmation the names of 427 army nurses who have been nominated for permanent commissions in the Regular Army Nurse Corps. On that list 120 were recommended for appointment as captains and 307 for appointment as first lieutenants. If and when confirmed by the Senate, the authorized strength of the new Regular Army Nurse Corps will be 500. The authorized strength has been set as 2,558.

RESEARCH ON HEPATITIS

The U. S. Army in Germany has taken over one of Hitler's "Youth Through Joy" hospitals at Bayreuth in Bavaria, which will be used as a research center for the study of infectious hepatitis. A laboratory for this research study has been set up in the University of Heidelberg. The study is being carried out under the direction of the Commission on Virus and Rickettsial Disease of the Army Epidemiological Board.

MEETING OF MEDICAL OFFICERS IN KOREA

The first periodic meeting of U. S. Army medical officers in Korea was held at the 34th General Hospital at Seoul, July 15. About one hundred officers attended. Among the papers read were the diagnosis and treatment of common dermatologic diseases by Capt. Woodrow W. Murphy of the 34th General Hospital, and rheumatic fever in Korea by Capt. Arnold G. Blumberg. The discussers were Capts. Lee Russell of the 377th Station Hospital and James H. Allison of the 382d Station Hospital. In addition to the scheduled program Dr. William McD. Hammon of the Army Epidemiological Board presented a film on arthropod borne virus encephalitides, with special emphasis on Japanese B encephalitis. The chairman of the scientific meeting was Major William B. Draper, chief of medical service, 34th General Hospital, who introduced Lieut. Col. John J. Marren, commanding officer of the hospital, and Col. William D. Willis, corps surgeon.

CIVILIAN PERSONNEL NEEDED FOR WORK IN JAPAN

The War Department is recruiting civilian personnel for work with the military government, Eighth Army, in Japan, and needs immediately the following competent personnel: a bacteriologist, senior chemist and assistant venereal disease control officer (M.D.), with annual salaries of $7,381.50; also a sanitary engineer at $6,127.50. Other positions of similar types frequently are available. Persons interested should write to the War Department Special Staff, Civil Affairs Division, Personnel and Training Branch, Washington 25, D. C.

HEALTH IN JAPAN

In his report to the War Department for the March-April period General MacArthur stated that the increase in malaria in the Ryukyus persisted with 8,432 cases reported, while the number of cases of trachoma and influenza in Okinawa decreased to 5,597 and 2,414 respectively. Meanwhile the training of nurses continued with fifty girls being selected for the first year nursing course at the three Okinawa hospitals. The March 1 census of the Ryukyus showed that 833,074 persons inhabited the islands. The number of Ryukyuans repatriated by April 27 totaled 207,967.

ARMY AWARDS AND COMMENDATIONS

Colonel Edward S. Murphy

The United States of America Typhus Commission Medal has been awarded to Col. Edward S. Murphy, M. C., A. U. S., of Missoula, Mont. The citation read as follows: As assistant surgeon, First Army, from March 6 to May 8, 1945 in Germany, he exhibited keen professional ability and untiring effort in connection with the work of the United States Typhus Commission in the investigation, prevention and control of the spread of the deadly disease among American troops and countless thousands of civilian personnel in the occupied area. His organization of efficient control groups and institution of prompt preventive measures were responsible for the low incidence of typhus in his command. Dr. Murphy has also been awarded the Bronze Star and the Purple Heart. He graduated from Creighton University School of Medicine, Omaha, in 1916 and entered the military service in the recent war in September 1942.

Captain Vincent A. Spinelli

The Army Commendation Ribbon has been awarded to Capt., later Major, Vincent A. Spinelli, M. C., A. U. S., now of White Plains, N. Y. The citation signed by Brigadier Malcolm C. Grow read in part as follows: Captain Spinelli is highly commended for outstanding performance of duty as convalescent services personal physician, AAF Convalescent Hospital, Fort Logan. During the period Jan. 24, 1945 to Sept. 19, 1945 as a personal physician to a group of convalescent patients he performed his duties in a most outstanding manner. The sincerity in which he cared for his patients contributed immensely to the high standards which his hospital maintained. Dr. Spinelli graduated from the New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1939 and entered the military service in June 1941.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARKANSAS

Reorganize Administration of Medical School.—In a reorganization of administration of the University of Arkansas School of Medicine, Little Rock, Dr. Henry C. Chenault, dean, has been made vice president of the university in charge of medical education and hospitalization, and Dr. Benjamin B. Wells, associate professor of medicine, has been appointed dean of the medical school. Dr. Chenault has served as dean since last October. Dr. Wells, a graduate of Baylor University College of Medicine, Houston, 1935, was associated with the Carnegie Institution, Washington, as an investigator, 1941-1942, before coming to the university. From 1936 to 1939 he was an instructor in physical chemistry at Baylor University College of Medicine. A plan has been advanced for the revision and expansion of the staff and departments of the medical school with the employment of full time personnel. All divisions will have permanent department heads and staffs who will continue to use the services of part time specialists. The plan was developed with the cooperation and in accordance with recommendation of the Arkansas Medical Society and national medical authorities, President Lewis W. Jones said. The reorganization will allow for the integration of premedical and medical education programs. Staff appointments and policies will be approved by the university president in contrast to the situation in past years, in which the medical school has been practically autonomous. Other objectives of the program include the development of postgraduate teaching in various specialties of medicine and surgery in cooperation with the Arkansas Medical Society, a postgraduate training program coordinated with the medical school leading to advanced degrees in basic sciences related to medical and surgical sciences, a cooperative program of specialty training in hospitals throughout the state and a nurses training school where students may obtain a bachelor degree in nursing.

COLORADO

State Medical Meeting at Denver.—The seventy-seventh annual session of the Colorado State Medical Society will be held at the Shirley-Savoy Hotel, Denver, September 17-20, under the presidency of Dr, Archie C. Sudan. Among others, the following out of state speakers are on the program:

James B. Brown, St. Louis, Neck Dissection for Metastatic Carcinoma.
Creighton Barker, New Haven, Conn., Objectives of Modern State Medical Societies.
J. William Hinton, New York, Acute Abdominal Pain: Its Surgical Significance.
Robert J. Crossen, St. Louis, Advances in Diagnosis and Treatment of Cancer of Uterus.
James B. Brown, St. Louis, Limitations and Possibilities in Plastic Surgery.
James J. Boyle, Washington, D. C., The Politicomedical Scene in Washington.
Emery A. Rovenstine, New York, The Influence of Anesthetic Agents on the Peripheral Circulation During Hemorrhage.
Lieut. Col. Michael Buscemi, M. C., Los Alamas, N. M., Role of Radioactive Isotopes in Clinical Medicine.

At the close of the scientific sessions each afternoon a question hour will be conducted with guest speakers and Colorado essayists available to answer questions from the audience. The house of delegates will meet Wednesday morning. All sports events will be conducted Wednesday afternoon. The Woman's Auxiliary will celebrate its silver anniversary September 18-20 with headquarters at the Albany Hotel. The annual banquet and dance will be held Saturday at 7: 30 p. m.

DISTRICT OF COLUMBIA

George Washington Promotions.—George Washington University School of Medicine has announced the promotion of Dr. James W. Watts to a full professorship in neurologic surgery. Other promotions include those of Dr. Clayton B. Ethridge, who was made an associate clinical professor in medicine, Dr. John H. Lyons a clinical professor of surgery, Dr. Henry Rappaport a professorial lecturer of pathology, Ira R. Telford, Ph.D., an associate professor of anatomy and Carlton R. Treadwell, Ph.D., an associate professor of biochemistry.

GEORGIA

Seminar in Obstetrics.—At the University of Georgia School of Medicine, Augusta, an obstetric seminar will be held September 1-6 under the guidance of the directors of maternal and child health of Georgia and South Carolina, Dr. Guy V. Rice Jr., Albany, and Dr. Hilla Sheriff, Columbia, respectively. The lecturers will be seventeen specialists certified by the Board of Obstetrics and Gynecology. Two diplomates of allied specialties will also participate. Attendance will be limited to physicians of Georgia and South Carolina.

Poliomyelitis Conference at Warm Springs.—Marking the twentieth anniversary of the founding of Georgia Warm Springs Foundation, a three day clinical conference on diagnosis and treatment of poliomyelitis will be held at Warm Springs September 15-17. About twenty of the nation's authorities in the fields of neurology, pathology, pediatrics, orthopedics, physical medicine and internal medicine will present papers reviewing the advances in knowledge of poliomyelitis. The papers and discussions will constitute a new book on diagnosis and treatment of the disease for publication in 1948. Clinical demonstrations of modern methods of treatment will be given by the medical staff of the Warm Springs Foundation. Physicians interested in attending this conference should make inquiries to the Georgia Warm Springs Foundation, 120 Broadway, New York 5. A complete program of the meeting will be available on request.

MICHIGAN

Five Veteran Physicians Honored.—The St. Clair County Medical Society honored five "fifty year" physicians at its annual spring dinner meeting in St. Clair in June. They were Drs. James A. Attridge, Albert L. Callery, both of Port Huron; Aaron B. Armsbury, Marine City; Christopher McCue, Goodells, and William G. Wight, Yale.

Health Department Merger.—Lansing Health Department and the county health unit consolidated July 1, and authority over the Lansing group was transferred to the Ingham County board of supervisors. Dr. Roelof Lanting, director of the Lansing health department, became the director of the city-county. unit. Under the merger, much of the duplication of effort in sanitary work is expected to be eliminated. The organization will also be entitled to larger state and federal aid since the merger. The health committee of the board of supervisors will act as a policy making authority for the time being.

NEW HAMPSHIRE

Eye Institute Closes.—The Dartmouth Eye Institute, Hanover, has terminated all clinical activities "because of an inability to provide a sound financial basis for future activities," the managing trustee, John Pearson, has announced. The clinic was established in 1921 when Professor Adelbert Ames Jr. undertook the study of problems of visual optics. The current work of Professor Ames in visible perception continues under the auspices of the Hanover Institute. Professor Ames, who once practiced law, has been research professor of physiologic optics since 1919. In 1921 he was a member of the committee on physiologic optics of the National Research Council. Professor Ames and his fellow worker Gordon H. Gliddon presented a paper on "Ocular Measurements" before the Section on Ophthalmology at the annual meeting of the American Medical Association in 1928 in Minneapolis, which paper was published in the transactions of the section.

NEW YORK

Postgraduate Instruction.—The Medical Society of the State of New York and the New York State Department of Health have arranged two programs of postgraduate instruction at the County Hospital, Cortland. Dr. Carl H. Greene, clinical professor of medicine, Long Island College of Medicine, Brooklyn, will speak on "Nephritis," September 19 at 8: 30 p. m., and Dr. William Dock, professor of medicine at Long Island College of Medicine, on "Peptic Ulcer and Gastric Cancer," October 17 at 8: 30 p. m. For the Broome County Medical Society, Dr. Franz Altmann, assistant clinical professor of otolaryngology, Columbia University College of Physicians and Surgeons, New York, will speak on "Ménière's Syndrome and Related Conditions" at the Binghamton City Hospital, November 11 at 8: 30 p. m.

New York City

Mr. Rockefeller Gives Entire Block to Hospital.—Memorial Hospital for the Treatment of Cancer and Allied Diseases has received an entire block as a gift from John D. Rockefeller Jr. It is bounded by Second and Third avenues and 68th and 69th streets. The property has an estimated value of $3,500,000. In 1936 Mr. Rockefeller donated the block on which the hospital now stands.

Tuberculosis Survey Reveals Active Cases.—Community x-ray surveys conducted in Queensboro by the Queensboro Tuberculosis and Health Association revealed 13 active cases of tuberculosis. The annual report made June 21 stated that the association had x-rayed 30,707 persons from April 1946 to March 1947. The 13 patients with active tuberculosis were hospitalized through association workers.

To Lecture in South America.—Dr. Arthur W. Grace, professor of clinical dermatology and syphilology, Long Island College of Medicine, Brooklyn, left July 27 for a seven week lecture tour of South America, sponsored by the E. R. Squibb & Sons Inter-American Corporation and the Squibb Institute for Medical Research. Dr. Grace will discuss modern methods of diagnosis and treatment of skin and venereal diseases. He will visit hospitals and universities in six Latin American countries. A graduate of the University of London, England, Dr. Grace has been on the faculty of the Long Island College of Medicine since 1931. He is a former special consultant in venereal diseases to the United States Public Health Service and assistant attending physician to the New York Hospital.

NORTH DAKOTA

Dr. Lawton Appointed Dean. — Dr. Alfred H. Lawton, assistant professor of medicine and assistant professor of physiology and pharmacology at the University of Arkansas School of Medicine, Little Rock, since last September, has been appointed dean of the University of North Dakota, Grand Forks. Dr. Lawton, a native of Iowa, received his medical degree at Northwestern University Medical School, Chicago, 1941, interned at Passavant Memorial Hospital and held a residency at Henry Ford Hospital, Detroit. He has been an officer of the U. S. Public Health Service for four and one-half years, doing research at the National Institute of Health, Bethesda, Md.

OHIO

University Appointments.—Dr. Richard L. Meiling, formerly of Western Reserve University School of Medicine, Cleveland, has been appointed part time assistant professor in obstetrics and gynecology. He received his medical degree from the University of Munich. Dr. Meiling entered the army in 1940 and served as air evacuation officer and executive officer, Office of the Air Surgeon. He was awarded the Legion of Merit.

Appoint Five Department Heads at Cincinnati.—The University of Cincinnati College of Medicine has appointed Dr. Leon Goldman professor of dermatology and syphilology and director of the department at the Cincinnati General Hospital. Dr. Goldman graduated at the University of Cincinnati College of Medicine, 1929, where he was an assistant professor. He has served as a consultant to the United States War Department and to the National Research Council. Dr. Stanley Garber was appointed professor of obstetrics and director of the hospital's department of obstetrics. Dr. Garber has been an assistant professor. He is a graduate of Harvard Medical School, Boston, 1934, and has served on hospital staffs in Boston and Cincinnati. Dr. Donald J. Lyle was appointed professor of ophthalmology and director of the hospital's department of ophthalmology. A graduate of the University of Cincinnati College of Medicine, 1919, he has been on the staff of the Good Samaritan Hospital, Christ Hospital, Children's Hospital, Jewish Hospital and St. Mary's Hospital, and instructor in anatomy at the university. Dr. Henry M. Goodyear was appointed professor of otolaryngology and director of the hospital's department of laryngology. A graduate of Northwestern University Medical School, 1915, he has been a staff member of Cincinnati hospitals and an associate professor at the university. Dr. Charles D. Aring, formerly associate professor in neurology at the University of Cincinnati College of Medicine, has been appointed the new Albert Barnes Voorheis professor of neurology and director of neurology at the Cincinnati General Hospital, effective September 1. He received his medical degree at the university in 1930 and, following residencies in Boston hospitals, studied in England, Madrid and Breslau as a Rockefeller fellow in neurology. He was an associate professor of neurology from September 1936 to 1946 and returns to Cincinnati following a year as professor of neurology at the University of California, San Francisco.

OKLAHOMA

State Medical Election.—At the annual meeting of the Oklahoma State Medical Association last May Dr. Paul B. Champlin, Enid, became president, Dr. Clarence E. Northcutt, Ponca City, president-elect and Dr. Lewis J. Moorman, Oklahoma City, secretary.

New Orthopedic Society.—A group of orthopedists met in Tulsa last May to form the Oklahoma Orthopedic Society for the furtherance of orthopedic surgery in the state. It will hold two meetings a year. Membership in the American Board of Orthopedic Surgery makes a physician eligible to the society. Officers elected were Dr. Don H. O'Donoghue, Oklahoma City, president, Dr. Frank A. Stuart, Tulsa, vice president, and Dr. Samuel T. Moore, Oklahoma City, secretary-treasurer.

VIRGINIA

Director of Division of Cancer.—Dr. Mason Romaine, Petersburg, became director of the division of cancer control of the state health department July 1. A graduate of the University of Virginia Department of Medicine, Charlottesville, 1917, he was appointed full time public health officer in Petersburg in 1941, after having been associated with the department since 1922.

To Establish Mission Hospital in Korea.—Dr. Paul S. Crane, temporarily of Richmond, will leave shortly to establish a mission hospital in Korea under the auspices of the Southern Presbyterian Foreign Mission Committee. He will be joined by his father, Dr. J. C. Crane, who has spent many years as a Presbyterian missionary in Sunchon, Korea, site of the new hospital. Dr. Crane received his medical degree from Johns Hopkins University School of Medicine, 1944. Since his release from army service he has been gathering equipment and supplies for his undertaking.

Dr. Rudolph Holmes Gives Library to University.—Dr. and Mrs. Rudolph W. Holmes of Charlottesville, formerly of Chicago, have presented their library, chiefly on obstetrics and gynecology, to the University of Virginia Medical Library as a memorial to their respective mothers, Paula Wieser Holmes and Sarah Moore Baxter. The collection includes about 1,000 items dating from the early seventeenth century, comprising textbooks and monographs in English, German and French which offer a comprehensive historical survey of the subjects to recent times. Dr. Holmes formerly was professor of obstetrics and gynecology at Rush Medical College, Chicago, and since 1926 has been professor emeritus, University of Chicago, and more recently of the University of Illinois.

WEST VIRGINIA

First Mass X-Ray Program.—The first mass x-ray study in West Virginia is scheduled for Clarksburg beginning September 8. The program is being launched by the state health department as part of the campaign against tuberculosis. Efforts will be made to make roentgenograms of all persons over school age in Clarksburg. The direct sponsors will be the Harrison County Tuberculosis and Health Association. Participating agencies, besides the state health department, will include the Harrison County Medical Society and Auxiliary, local city and county health departments, the school board, nurse's aides and various service clubs and civic organizations. According to Dr. Newman H. Dyer, Charleston, state health commissioner, Clarksburg has been selected for this demonstration because it has one of the oldest local tuberculosis associations in the state and also has adequate facilities for diagnosis and follow-up. One of the seven permanent diagnostic clinics is located in that city. Volunteer workers will make a house to house canvass to obtain signatures of persons desiring to be examined. Besides offering free x-ray service to those desiring a check for tuberculosis, the state health department will give tuberculin tests to school children, and those with a positive reaction will have roentgenograms. If the survey at Clarksburg is successful, the state department plans to conduct similar studies in other West Virginia cities.

WYOMING

Dr. Yoder Appointed State Health Officer. — Dr. Franklin D. Yoder, Cheyenne, has been appointed director of the state department of public health. He will attend the University of California at Berkeley to take a course in public health administration and will assume his new position July 1, 1948. Dr. Yoder, who graduated from Northwestern University Medical School, Chicago, in 1939, served as a flight surgeon in the Army of the United States in the recent war.

GENERAL

College of Surgeons Clinical Congress.—The thirty-third annual clinical congress of the American College of Surgeons, including the twenty-sixth annual hospital standardization conference, will be held at the Waldorf-Astoria, New York, from September 8 to 12. The five day program features operative and nonoperative clinics in thirty-eight hospitals and scientific sessions in general surgery and surgical specialties. Dr. Allen O. Whipple, New York, will deliver the second Martin Memorial Lecture, on "The Qualifications of the Surgeon and the Cancer Problem." Dr. Arthur W. Allen, Boston, will be inaugurated president.

Scholarships for Training in Cerebral Palsy.—Scholarships totaling $5,000 a year for graduate study to aid the cerebral palsied were voted recently by the national council of Alpha Chi Omega, to be administered by the Cerebral Palsy Division of the National Society for Crippled Children and Adults, Inc. Graduate scholarships will be given to physicians, therapists and special education teachers. The allotment will cover maintenance and tuition for study at a recognized training center for a minimum of three months. Recipients will be selected by the National Society's cerebral palsy medical advisory committee and the Cerebral Palsy Division.

Special Society Elections.—At the annual meeting of the American Broncho-Esophagological Association Drs. Millard F. Arbuckle, St. Louis, was elected president, Paul H. Holinger, Chicago, secretary and Clyde A. Heatly, Rochester, N. Y., treasurer.——At the thirteenth annual meeting of the American College of Chest Physicians, June 5-8, the following physicians were elected: Major Gen. Shelley U. Marietta, (Ret.), Washington, D. C., president; Dr. Richard H. Overholt, Brookline, Mass., president-elect, and Dr. Benjamin L. Brock, Evanston, Ill., secretary-treasurer.——Officers of the American Neurological Association for 1947-1948 are Dr. George Wilson, Philadelphia, president; Dr. Harold G. Wolff, New York, first vice president; Dr. H. Houston Merritt, Bronxville, N. Y., secretary-treasurer.

Propose World Federation of Clinical Pathologists.—At a meeting of the European Association of Clinical Pathologists in Cambridge, England, June 27, this organization reconstituted itself as a world federation of constituent bodies. The meeting, which was attended by representatives of various countries, including France, Great Britain, Norway, Russia and Czechoslovakia, appointed a committee to call a meeting of delegates next November in Paris with the view of formulating a constitution and electing officers. The aims of the world federation, according to Dr. Sidney C. Dyke, F.R.C.P., are to develop further clinical pathology and its allied sciences, to have regard for the scientific and professional status of those engaged in its study and practice, and to foster international good will. Societies throughout the world are invited to communicate with the joint secretaries of the federation committee, either Dr. William H. McMenemey, Pathological Department, the Royal Infirmary, Worcester, or Dr. Joseph Ungar, Greenford, Middlesex, England.

Reopen Peiping Union Medical College.—The new board of trustees of the China Medical Board, Inc., which has been organized since termination of all relationship between the board and the Rockefeller Foundation, announced plans July 1 for reopening the Peiping Union Medical College. In a statement the board emphasized the objectives of the assumption of responsibility by the Chinese faculty and staff of the college and development in China of financial support. Although the Peiping Union Medical College and the China Medical Board, Inc., are separate and distinct corporate entities, the board owns the college buildings and equipment, which it leases for a nominal sum, but the trustees of the college are responsible for its administration and educational policy. The board will continue to support the college and its program. The Peiping Union College was founded in 1906 by a group of mission boards. The China Medical Board was created in 1915 as a division of the Rockefeller Foundation but became a separate organization in 1928. The decision to end all connection between the two was announced last January (THE JOURNAL, February 22, p. 564).

Annual Postgraduate Course in Chest Diseases in Chicago.—The American College of Chest Physicians will conduct its second annual postgraduate course in diseases of the chest September 15 to 20 at the Municipal Tuberculosis Sanitarium, Chicago. The out of state participants include Andrew L. Banyai, associate clinical professor of medicine, Marquette University School of Medicine, Milwaukee; Alvan L. Barach, associate professor of clinical medicine, Columbia University College of Physicians and Surgeons, New York; Alvis E. Greer, professor of clinical medicine, Baylor University College of Medicine, Dallas; John B. Grow, thoracic surgeon, National Jewish Hospital, Denver; Milton I. Levine, assistant professor of clinical pediatrics, Cornell University Medical College, New York; Jay A. Myers, clinical professor of medicine and public health, University of Minnesota Medical and Graduate Schools; George G. Ornstein, associate professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, New York; J. Winthrop Peabody, professor of diseases of the respiratory system, Georgetown University School of Medicine, Washington, D. C.; Karl H. Pfuetze, medical director, Mineral Springs Sanatorium, Cannon Falls, Minn., and Oscar A. Sander, studies in occupational diseases and industrial case findings.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

	Week Ended			Total to		Total *	
Division and State	Aug. 2, 1947	Aug. 3, 1946	Median, 1942-1946	Aug. 2, 1947	Aug. 3, 1946	March 16-Aug. 2, 1947	March 17-Aug. 3, 1946
New England:							
Maine	0	1	1	7	4	4	4
New Hampshire	1	12	1	6	39	2	38
Vermont	1	1	1	10	10	2	6
Massachusetts	14	11	11	33	23	26	19
Rhode Island	7	0	0	20	0	17	0
Connecticut	3	0	9	13	29	10	21
Middle Atlantic:							
New York	22	43	4[illegible]	147	223	111	190
New Jersey	2	14	14	32	54	26	48
Pennsylvania	10	9	9	59	62	45	50
East North Central:							
Ohio	7	44	12	63	155	53	140
Indiana	9	11	5	34	48	18	43
Illinois	19	117	26	97	327	77	319
Michigan	14	46	7	62	93	38	85
Wisconsin	3	30	3	29	72	5	59
West North Central:							
Minnesota	9	257	6	49	623	36	622
Iowa	5	50	1	32	123	24	114
Missouri	4	77	4	39	198	29	191
North Dakota	2	31	0	23	49	18	49
South Dakota	0	23	0	2	47	0	47
Nebraska	7	37	3	53	108	46	107
Kansas	1	80	5	30	206	12	202
South Atlantic:							
Delaware	2	2	2	7	4	7	4
Maryland	1	2	2	19	19	13	17
District of Columbia	0	2	2	3	4	1	3
Virginia	2	12	12	29	35	19	29
West Virginia	0	5	5	9	20	5	17
North Carolina	4	6	5	35	48	20	41
South Carolina	0	1	2	9	16	8	13
Georgia	2	8	5	20	74	22	66
Florida	2	17	1	55	399	30	350
East South Central:							
Kentucky	3	3	8	20	43	19	40
Tennessee	1	10	10	35	39	23	30
Alabama	3	14	4	27	200	14	197
Mississippi	0	9	2	23	104	6	87
West South Central:							
Arkansas	4	30	4	31	121	21	109
Louisiana	0	20	4	38	169	20	150
Oklahoma	1	28	14	24	131	13	125
Texas	8	43	38	105	547	80	519
Mountain:							
Montana	1	7	0	5	42	3	26
Idaho	5	3	0	30	6	20	6
Wyoming	0	6	0	6	20	3	19
Colorado	3	63	5	25	289	20	288
New Mexico	1	9	2	10	43	7	42
Arizona	2	9	1	15	38	12	35
Utah	0	2	2	6	20	1	14
Nevada	0	1	0	0	1	0	1
Pacific:							
Washington	5	13	5	35	89	27	56
Oregon	1	5	5	18	25	13	21
California	28	60	18	467	411	318	324
Total	219	1,284	...	1,955	5,450†	1,344	4,983
Median, 1942-1946	...	...	474	2,913		2,516	

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* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).

† Figures changed by corrected reports.

CORRECTION

Epinephrine for Bandl Ring Contraction.—In the answer to the query and minor note in THE JOURNAL, July 12, 1947, page 985, the metric equivalent in the parenthesis for 6 to 8 minims should have been given as 0.4 to 0.5 cc.

Deaths

Edward Robinson Baldwin ⊕ Saranac Lake, N. Y., died May 6, aged 82, of bronchopneumonia. Born in Bethel, Conn., Sept. 8, 1864, Dr. Baldwin graduated at Yale University School of Medicine, New Haven, in 1890 and served an internship at the Hartford Hospital before beginning practice at Cromwell, Conn., in 1891. For many years he was associated with the Saranac Laboratory, where in 1892 he became an assistant and later director, serving until 1926. He had been a trustee and since 1916 chairman of the executive committee of the Trudeau Sanatorium, its vice president from 1916 to 1934 and honorary president since 1945. Dr. Baldwin instituted the Trudeau School of Tuberculosis in 1916 and was for many years director of the Trudeau Foundation. He was a past president of the American Climatological and Clinical Association and of the National Tuberculosis Association, a member of the Association of American Physicians and the American Society for Clinical Investigation, the American Association of Pathologists and Bacteriologists and the New York Academy of Medicine, and honorary life member of the Tuberculosis Society of Scotland. He was president of the Saranac Lake Board of Health from 1898 to 1901 and then for many years was president of the Reception Hospital for Tuberculosis. In 1918 he was contract surgeon for the tuberculosis consulting examination board at Camp Devens and a delegate of the League of Red Cross Societies to the 1919 conference in Cannes, France. At the time of his death he was a trustee of the Saranac Lake General Hospital. In 1916 with the late Dr. Walter B. James he inaugurated the Edward Livingston Trudeau Foundation, which engaged in tuberculosis research and teaching. In 1920 he served on the medical advisory board of the U. S. Public Health Service and from 1930 to 1940 on the consulting medical board of the U. S. Veterans Bureau. He had been a member of the tuberculosis committee of the New York State Health Commission since 1931, a member of the Saranac Lake School Board District No. 1, and director of the Adirondack National Bank. Dr. Baldwin was awarded the honorary degree of master of arts from Yale in 1914 and doctor of science from Dartmouth in 1937. In 1927 the National Tuberculosis Association awarded him the Trudeau Medal. In 1936 he received the Kober Medal from the Association of American Physicians. He was editor emeritus of the *American Review of Tuberculosis*, author of many scientific papers on tuberculosis, co-author of "Tuberculosis, Bacteriology, Pathology and Laboratory Diagnosis" and a contributor to Osler's System of Medicine.

Ernest Granville Crabtree ⊕ Boston; born in Zanesville, Ohio, 1883; Harvard Medical School, Boston, 1914; specialist certified by the American Board of Urology, Inc.; instructor in urology at the Harvard Medical School, Courses for Graduates; member of the New England Obstetrical and Gynecological Society, New England Surgical Society, American Association of Genito-Urinary Surgeons and the American Urological Association, of which he was president-elect; past president of the Massachusetts Society for Social Hygiene; fellow of the American College of Surgeons; served with the British army during World War I; on the staffs of the New England Baptist, Beth Israel and Boston Lying-In hospitals in Boston and the Newton-Wellesley Hospital in Newton; died in Sharon, Vt., May 30, aged 63, of coronary disease.

William West Sutherland ⊕ Ridgewood, N. J.; born in Jackson, Mich., Sept. 10, 1898; University of Oregon Medical School, Portland, 1925; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; served during World War I; during World War II served in the Pacific for twenty months in the medical corps of the U. S. Naval Reserve and had been medical officer of service squadron 12, Pacific Fleet, which saw action in the Mariannas, Palau, Iwo Jima and Okinawa; held the rank of commander when his service terminated in March 1946; at one time examining physician for a local draft board; for many years affiliated with the Paterson (N. J.) General Hospital, where he served as president of the medical board; died May 29, aged 48, of heart disease.

George Loring Tobey Jr.,⊕ Boston; born in Lancaster, Mass., June 3, 1881; Harvard Medical School, Boston, 1903; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and formerly vice president; member, past president and vice president of the American Otological Society; member of the American Laryngological Association, American Laryngological, Rhinological and Otological Society and the New England Otological and Laryngological Association; fellow of the American College of Surgeons; served during World War I; consulting surgeon at the Massachusetts Eye and Ear Infirmary; died May 20, aged 65, of valvular heart disease.

Franklin Harold Crail ⊕ Las Vegas, N. M.; born on June 28, 1880; Northwestern University Medical School, Chicago, 1907; fellow of the American College of Surgeons; past president of the New Mexico Medical Society; for many years president of the board of education; served during World War I and on the medical examining selective service board during World War II; founder and first president of the Rotary Club; at one time superintendent of the New Mexico State Hospital; on the staffs of the Las Vegas and St. Anthony's hospitals; died in Forrest City, Ark., May 22, aged 66, of coronary heart disease.

John Darrington ⊕ Yazoo City, Miss.; born in Wilkinson County, March 6, 1870; Medical Department of Tulane University of Louisiana, New Orleans, 1892; member of the House of Delegates of the American Medical Association in 1906 and 1907; past president of the Mississippi State Medical Association, Yazoo County Medical Society, Tri-State Medical Association, Central Medical Society and the Southeastern Surgical Congress; member of the state board of health from 1907 to 1915 and again from 1929 to 1935; affiliated with the King's Daughters Hospital; died May 19, aged 76.

Peter Felix Carlucci ⊕ Detroit; University of Pennsylvania Department of Medicine, Philadelphia, 1907; affiliated with St. Mary's Hospital; resident physician, Tuller Hotel; died May 14, aged 64, of heart disease.

William Warren Cowgill, Shaker Heights, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1904; died June 6, aged 67, of cerebral hemorrhage.

William Edward Durr, Glencoe, Ohio; Ohio Medical University, Columbus, 1905; member of the American Medical Association; died in the Ohio Valley General Hospital in Wheeling, W. Va., May 16, aged 70, of chronic glomerulonephritis.

Lionel Sinclair Luton ⊕ St. Louis; Rush Medical College, Chicago, 1901; fellow of the American College of Physicians; served during World War I; died May 16, aged 71, of coronary thrombosis.

Bernard John Meirink, Germantown, Ill.; Washington University School of Medicine, St. Louis, 1899; for many years mayor; served on the staff of St. Joseph Hospital in Breese; died in Manchester, Mo., May 13, aged 74, of cerebral hemorrhage and hypertension.

Harry J. Newell ⊕ Alexandria, Neb.; John A. Creighton Medical College, Omaha, 1903; on the staff of the York (Neb.) General Hospital, where he died May 4, aged 75, of carcinoma of the liver.

William Thurston Patch, Boston; University of the City of New York Medical Department, New York, 1890; member of the American Medical Association; died recently, aged 86, of bronchopneumonia.

Richard Reeser ⊕ Columbia, Pa.; Jefferson Medical College of Philadelphia, 1896; past president of the Lancaster County Medical Society; served during World War I; on the staff of the Columbia Hospital; died May 30, aged 72, of coronary thrombosis.

Frank Rose, Spokane, Wash.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; member of the American Medical Association; served during World War I; died in the Veterans Administration Facility in American Lake April 4, aged 77, of bronchopneumonia.

Morton Maxwell Small, Waterville, Maine; Medical School of Maine, Portland, 1901; member of the American Medical Association; died April 23, aged 67 of uremia, cerebral hemorrhage and nephritis.

Clarence Nelson Smith, Glen Elder, Kan.; Kansas City (Mo.) Medical College, 1905; died April 9, aged 73, of diabetes mellitus.

Vere Treichler ⊕ Elizabethtown, Pa.; Jefferson Medical College of Philadelphia, 1905; affiliated with the Philadelphia Freemasons' Memorial Hospital, where he died April 28, aged 67, of angina pectoris.

John Edward Welsh, Brimfield, Ill.; St. Louis University School of Medicine, 1920; member of the American Medical Association; served during World War I; examining physician for the county draft board during World War II; died in St. Francis Hospital in Peoria May 4, aged 64, of thyrotoxicosis.

Herbert Carlton Woods, Tama, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1894; member of the American Medical Association; died in the Deaconess Hospital, Marshalltown, April 5, aged 77, of prostatic hypertrophy.

Foreign Letters

PARIS

(From Our Regular Correspondent)

July 15, 1947.

The New Medical Code

For some time the Order of Doctors has been preparing a code of Deontology, which has lately been modified by the Council of State, approved by the government and published in the *Journal officiel.* The code contains seventy-nine articles concerning the practice of medicine and the relations of doctors one with another.

General Duties of Doctors

The code emphasizes the four principles, which are, by tradition, those of French medicine: (1) free choice of the doctor by the patient, (2) liberty of prescription by the doctor, (3) direct agreement of the doctors and the patients as regards fees and (4) direct payment of the fees by the patient to the doctor. These principles are imperative for every doctor save when their observance is incompatible with legal rules. All publicity and personal propaganda of a commercial character are forbidden to doctors, also all payments or acceptance of monies between practitioners and all commissions whatever and all jobbery between doctors, pharmacists, medical auxiliaries or any other person. It forbids doctors any outside activity incompatible with the professional dignity and also the use of a political mandate or of an administrative function for professional ends to increase the number of their clients. The doctor must not meddle with family affairs.

Duties to Patients

In case of public danger, a doctor shall not leave his patients save by formal written order from competent authorities. The code emphasizes that, even when he is alleviating suffering, the primordial care of the doctor must be the preservation of human life. Except for emergencies, a doctor retains always the right to refuse his attendance on personal or professional grounds. While refusing to continue in attendance, the doctor must enforce the respect for the rules of hygiene and prophylaxis.

A special article deals with therapeutic abortion, which can be done when the life of the mother is in serious danger. In such cases the doctor must abide by the prescriptions of article 87 of the Decree of the 29th of July 1939, which prescribes the examination of the expectant mother by three doctors, who must draw up a statement giving the reasons for the abortion and address it by registered post to the president of the district council of the region to which they belong. By another article the doctor is prohibited from reducing his fees in order to compete with his colleagues, but each doctor can give gratuitous attendance whenever his conscience prompts him to do so. It is forbidden to make a contract providing for a lump sum taking into consideration the duration or the efficiency of a treatment, except in the case of childbirth, surgical operation or physical therapy. The acceptance, the solicitation or the offer of a share of his fees, even if it does not materialize, constitutes a serious professional dereliction.

Duties Concerning Social Medicine

In several of its articles the code emphasizes the duty for doctors to give their full help to the services of social medicine and to collaborate in the work of the public authorities. The code also provides that the practice of medicine in the service of an enterprise, a collectivity or a private institution must be the subject of a written contract, which must be previously submitted to the departmental council of the order; doctors under a status established by the public authority are not subject to these dispositions. The doctor working in the preventive medicine service must refer all persons recognized as ill to practitioners. Except in urgent cases, doctors are forbidden to be at the same time the controlling and the treating doctor. Controlling doctors must not interfere with the treatment; in case of disagreement with the treating doctor, they must advise the latter personally.

Fraternal Duty

The code provides that, in the event of professional dissension between two colleagues and the impossibility of reconciliation, the president of the district council of the order is to be advised. In principle, a doctor must have only one office. Doctors are forbidden to have a colleague running another office for their account. As from the 1st of January 1951, a doctor must not establish himself in a building in which one of his practicing colleagues is located without the latter's agreement or, failing this, without the authorization of the district council of the order, except for specialists practicing different specialties.

All doctors, being members of the order, are subject to the code of deontology. They must assert that they have studied it and that they pledge themselves under oath and in writing to abide by it. Infractions of the code come under the disciplinary jurisdiction of the order. Similar codes are being prepared for dentists, chemists and midwives.

Bacteriostasis and Bacteriolysis of Mycobacterium Tuberculosis by Clitocybine B

A new antibiotic, clitocybine B, discovered by Professor Charles Hollande of the Montpellier Faculty of Pharmacy, has already been mentioned in the Paris letter. At a recent meeting of the Academy of Sciences in Paris Hollande presented his latest research on clitocybine. It is clitocybine B which has this action on the bacillus of tuberculosis. Hollande has been able to grow it in special culture mediums and under particular conditions; the other mycelia and cacophores, though exerting action on staphylococci, streptococci and meningococci, do not contain clitocybine B. As a bacterial test, the author has employed human bacilli of tuberculosis and has seen in vitro the bacteriostatic and bacteriolytic effects of clitocybine B. Guinea pigs inoculated with an emulsion of Mycobacterium tuberculosis, which emulsion had been in contact during twenty-four hours with clitocybine B, presented no organs or glands attacked two months and a half afterward at the necropsy, whereas test guinea pigs, inoculated at the same period, presented infected organs and caseous glands. Purified clitocybine B is not toxic for guinea pigs.

Miscellaneous

According to a communication of Charles Picard to the Académie des Inscriptions et Belles Lettres, a monument to Hippocrates has lately been discovered at Ostia, Italy. It is a new picture of Hippocrates representing a personage of entirely different aspect from any known up to now. The monument proves that this learned man was already known in Athens.

Professor Jacques Tréfouel, director of the Paris Pasteur Institute, has been elected a member of the Academy of Sciences.

Correspondence

EOSINOPHILIC GRANULOMA OF BONE

To the Editor:—The readers of the editorial comment "Eosinophilic Granuloma of Bone" (THE JOURNAL, April 26, p. 1284) may become confused on the issue of whether "eosinophilic granuloma of the bone" is a newly discovered disease entity or whether it is the monosymptomatic form of a systemic disorder formerly described under different designations as "Schüller-Christian's disease" by Rowland in 1928, or "lipid granulomatosis" by Chester in 1930 and by Fraser in 1934 and as "essential xanthomatosis of the normocholesteremic type" by Thannhauser and Magendantz in 1937 A similar comment has been made by Albert Weinstein, H. C. Francis and B. F. Sprofkin (Eosinophilic Granuloma of Bone, *Arch. Int. Med.* **79:** 176 [Feb.] 1947).

A. Schüller (Ueber eigenartiger Schadeldefekte im Jundalter, *Fortschr. a. d. Geb. d. Röntgenstrahlen* **23:**12, 1915-1916) described "peculiar defects of the membraneous bones of the skull," referring later (Ueber ein eigenartiges Syndrom von Dyspituitarismus, *Wien. med. Wchnschr.* **71:**510, 1921) to "a peculiar syndrome of dyspituitarism" H A. Christian (Defects in Membranous Bones, Exophthalmos and Diabetes Insipidus, in Contributions to Medical and Biological Research **1:**390, New York, Paul B. Hoeber, 1919; *M. Clin North America* **3:**849 [Jan.] 1920) called attention to a clinical syndrome consisting of defects in membraneous bones, exophthalmos and diabetes insipidus." A. Hand (Polyuria and Tuberculosis, *Arch. Pediat.* **10:**673, 1893) had already observed a case which belonged in this group in 1893 but classified his observation as "polyuria and tuberculosis." After the syndrome had been clinically established, the pathologist R. S. Rowland (Xanthomatosis and the Reticulo-endothelial System, *Arch. Int. Med* **42:**611 [Nov.] 1928; *Ann. Int. Med.* **2:**1277 [June] 1929) demonstrated that the histologic lesions characteristic of Schuller-Christian's syndrome consist of reticulum cells and histiocytes, cholesterol-containing "foam cells" and elements of acute inflammation like eosinophils, round cells and polynuclear elements. Rowland considered the development of "foam cells" as characteristic of the lesion as had been previously suggested by the dermatologists F. D. Weidman and Walter Freeman (Xanthoma Tuberosum, *Arch. Dermat. & Syph.* **9:**149 [Feb] 1924) on the basis of two autopsies of cases with lesions of the skin, central nervous system and other organs. In his pioneer work on the histology of Schuller-Christian's syndrome Rowland had already described the occasional involvement of the lung and supplemented the description of the pathologic changes in the lung with characteristic x-ray pictures, as others did later Chester (Ueber Lipoidgranulomatose, *Virchows Arch f. path. Anat.* **279:**561, 1930) demonstrated the granulomatous nature of the lesions and classified the disease as "lipid granuloma" The most complete histologic description of solitary bone lesions, supported by excellent photomicrographs in color, are found in the paper "Skeletal Lipoid Granulomatosis", by J. Fraser in 1934-1935. Fraser (Lipoid Granulomatosis of the Bones, *Brit. J. Surg.* **22:**800 [April] 1935) had already called attention to the endothelial proliferation, the accumulation of eosinophilic cells and the presence of giant cells in the earlier stages of the lesion in "lipoid granuloma." S. J. Thannhauser and Heinz Magendantz (The Different Clinical Groups of Xanthomatous Diseases, *Ann. Int. Med.* **11:**1662 [March] 1938. Thannhauser, S. J.: Lipidoses, Oxford University Press, 1940) demonstrated, on the basis of numerous clinical observations of cases of xanthomatous diseases of heterogeneous etiologies, that the cases of Schuller-Christian's syndrome and those of generalized lipoid granulomatosis showed normal cholesterol content of the serum in contrast to other groups of xanthomatous disease with hypercholesteremia. For this reason they used the name "essential xanthomatosis of the normocholesteremic type" for Schüller-Christian's syndrome and the generalized form of "lipoid granulomatosis." The cholesterol content of the tissues of this disorder in its xanthomatous phase is ten to twenty times higher than in normal tissues, while the cholesterol level of the serum remains normal. These authors, therefore, contended that the cholesterol accumulation in the xanthomatous cells in this disorder is not the result of cholesterol infiltration from the blood stream but is caused by new formation of cholesterol within those cells which gradually develop into xanthoma cells ("foam cells"). Thannhauser and Magendantz showed in their clinical material and in the cases reported in the literature that various organs (skin, "disseminata" type of xanthoma, osseous system, dura, brain, lung, pleura, liver, spleen and lymph nodes) may be involved singly or in various combinations in the systemic disease under discussion.

Louis Lichtenstein and H. L. Jaffe reported in a histologic study cases of solitary bone lesions which they designated as "eosinophilic granuloma of bones" (*Am. J. Path.* **16:**595 [Sept.] 1940). They apparently believed at this time that this type of solitary bone granuloma was a disease not before described. They were apparently not familiar with the exhaustive histologic description by J. Fraser in 1934 of several such cases ("skeletal lipoid granulomatosis") or with case 20 published in the article "Different Clinical Groups of Xanthomatous Diseases" by Thannhauser and Magendantz.

It was not until the studies of Sidney Farber and his co-workers (Eosinophilic or Solitary Granuloma of Bone, *J. Bone & Joint Surg.* **24:**499 [July] 1942; Eosinophilic Granuloma of Bone; Schuller-Christian's Disease, *Acta. med. Scandinav.* **118:** 292, 1944) (The Nature of "Solitary Eosinophilic Granuloma" of Bone, *Am. J. Path.* **17:**625 [July] 1941; The Nature of Some Diseases Ascribed to Disorders of Lipid Metabolism, *Am. J. Dis. Child.* **69:**350 [Nov.] 1944) and of J. E. Holm, G. Teilum and E. Christensen that the designation "eosinophilic granuloma" was applied not only to solitary bone lesions but also to those of "Schuller-Christian's syndrome" as well as to the generalized lesions in other organs of the group formerly classified as "lipoid granulomatosis" or clinically designated as "essential xanthomatosis of the normocholesteremic type." Through the microscopic studies of Teilum and his co-workers it was demonstrated that the natural history of such an "eosinophilic granuloma" comprised the following phases:

1. A proliferative phase in which histiocytic proliferation associated with accumulation of eosinophilic leukocytes is observed (See also Fraser.) In this phase there is no evidence of "foam cells"
2. A granulomatous phase with increase of blood vessels and fibrils, reticular cells and histiocytes, eosinophils and giant cells ('Touton cells') and incipient lipoid phagocytosis
3. A xanthomatous phase with nests and isolated foam cells.
4. A fibrous stage considered as a healing phase.

These four phases often show no strict demarcation during the course of the disease, and the histologic features of these four stages may overlap considerably during the course of the disease. It is evident from the microscopic studies of Teilum as well as of Farber that solitary "eosinophilic granuloma" is the monosymptomatic early stage of a systemic disease designated by Chester as well as by Fraser as "lipoid granulomatosis," by R. S. Rowland as "Schuller-Christian's syndrome" and by Thannhauser and Magendantz from the clinical point of view as "essential xanthomatosis of the normocholesteremic type."

The paper of Jaffe and Lichtenstein has caused considerable misunderstanding about the classification of the disease under discussion, as is seen in recent publications and in your editorial comment. The earlier authors as well as Lichtenstein and Jaffe refer to the same disease. The designation of the disease under discussion as "eosinophilic granuloma" is incomplete and therefore misleading, since "eosinophilic granuloma" is not a disease entity but only a phase in the histologic aspect of a distinct clinical syndrome. The xanthoma cell formation in the later phases of the lesions is as characteristic of the disease as the reticulohistiocytic proliferation and the accumulation of eosinophils in its earlier phases. If one does not prefer to use the older names "Schüller-Christian's syndrome" or "lipoid granulomatosis" or "normocholesteremic xanthomatosis" one should think of a classification which at least refers to the principal two histologic phases of the granuloma, namely the proliferative and eosinophilic phase and the xanthomatous phase. The designation of the localized and systemic disorder as "eosinophilic xanthomatous granuloma" seems to be more appropriate even if it does not embrace the reticulohistiocytic proliferation of the early lesion. Such a name would also prevent further misunderstanding in the conception and classification of this disorder.

So-called eosinophilic granuloma of bone is certainly not a newly discovered disease entity but is the monosymptomatic form of a well known systemic granulomatous disorder in which histiocytes, eosinophils and xanthoma cells are observed in the lesion at different phases.

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Medical Motion Pictures

FILM REVIEWS

NEW MOTION PICTURE ADDED TO A. M. A. FILM LIBRARY

The Medical Motion Picture—Its Development and Present Application. 16 mm., color, sound, 1,100 feet (one reel). Showing time thirty minutes. Produced for the American Medical Association in 1947 by Audio Productions, Inc., New York. Technical adviser Ralph P. Creer. Procurable on loan from Committee on Medical Motion Pictures, American Medical Association, Chicago 10.

Consisting of excerpts from several films made prior to and during World War I, this motion picture was prepared especially for the Centennial Session of the American Medical Association held in June in Atlantic City. Included are the first surgical motion picture made on 16 mm. film and modern technics such as animation, microcinematography, endoscopic photography and moving x-rays. The final sequence provides a look into the production of good teaching films. This sequence is illustrated by a case of cancer of the thyroid with metastasis to the thigh, which was treated with radioactive iodine. The use of the Geiger counter is demonstrated.

A detailed review will be published in a subsequent issue of The Journal.

The Air We Breathe. 16 mm., black and white, sound, 1,100 feet (one reel). Showing time thirty minutes. Produced in 1945 by Wilding Pictures, Inc. Procurable on loan from Mine Safety Appliances Company, Braddock, Thomas and Meade streets, Pittsburgh 8.

This film briefly illustrates the history of the search for a safe and satisfactory industrial breathing mask. As the film progresses, a central teaching theme is developed in which it is stressed that the air we breathe must be as safe as the food we eat. Dusts, fumes, gases and mists are illustrated in a clear and simple manner. The film then takes one into the long sustained effort put forth by the Mine Safety Appliances Company to develop an industrial breathing mask worthy of official approval by the United States Bureau of Mines. "Dustofol" is shown undergoing the various severe tests which the Bureau of Mines makes prior to granting an approval. Masks of different types constructed for specific purposes are illustrated, as are proper methods of applying, wearing, cleaning and maintenance.

This film may be classified as teaching in character, with a minimum of commercialism. It will probably be best received by groups of foremen, safety classes and shop safety councils. The photography is excellent.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Service Corporations: Liability, as Insurer, for Services of Special Nurse.—The plaintiffs sued to recover from the defendant King County Medical Service Corporation for a special nurse's services rendered during the hospitalization of the plaintiff wife in the defendant Seattle General Hospital and for other relief. The defendant hospital filed a cross complaint for the amount of the hospital bill. From judgments in favor of the plaintiffs, the defendants appealed to the Supreme Court of Washington.

At approximately 7:30 a. m. on the date of the accident the plaintiff wife, an elevator operator in the Chamber of Commerce Building at Seattle, entered that building with her husband, who was employed as its building superintendent, preparatory to commencing her work. Her husband was to take her in the elevator to the third floor, where she was to prepare for work and take over the operation of the elevator at 7:45 a. m. In the morning darkness, her husband opened the door of the elevator shaft. The elevator car was not at the lobby level, but the plaintiff wife, believing it to be there, stepped through the door and fell about 6 feet to the bottom of the shaft, sustaining the injuries which form the basis of the controversy herein.

For some time prior to the date of the accident the Seattle Chamber of Commerce had been a party to a contract with the defendant, King County Medical Service Corporation, which had previously entered into a separate contract with the Seattle General Hospital. This contract set forth that the Service Corporation had arranged with certain hospitals to furnish necessary hospital and nursing services to employees of the Chamber of Commerce. The employees were to pay a certain sum of money each month to the Service Corporation, which would in turn pay to any hospital furnishing services the amount of the bill. Among other things, the contract provided:

> 8. The medical director of the company, who is hereinafter referred to as the "medical director," or any physician whom he may designate, shall have the exclusive and absolute right to determine whether any patient is entitled to treatment, and if so, to what treatment, and any such determination made in good faith shall be deemed and held to be conclusive and binding upon the company, the patient, his heirs, executors, administrators and dependents and upon the employer if the employer be interested, and upon those offering said services. . . .

The hospitals cooperating with the plan agreed to "furnish to the patients described in the attached agreement such hospital and nursing services as may be reasonably required and authorized by the medical director of the company in the treatment of any injury or sickness which is covered by the service of the members of the King County Medical Service Bureau under the attached agreement." It was also agreed that the monies collected by the company together with certain payments to be made by patients "shall, in so far as the patients are concerned, be in full compensation of the services which are hereby offered by such hospitals and that when such sums are paid to the company the hospitals shall be bound to render to such individuals, groups or employees the services herein enumerated and that, in the event of the failure of the Company to pay said sums to the hospitals, then the hospitals shall look only to the Company for said sums and that the receipts of the Company to such individuals, groups or employees shall be binding upon the hospitals."

Medical treatment for the plaintiff wife's injuries was rendered by Dr. Smith, and hospitalization was furnished by the defendant Seattle General Hospital. Special nurses were employed by the plaintiffs. Dr. Smith at first assumed that the plaintiff wife was covered by the workmen's compensation act but later was notified by the Department of Labor and Industry that she did not come within its terms. Dr. Smith then assumed, from information given to him by the plaintiff wife and her husband, that she was covered by the Service Corporation contract but, at some time during the period of his treatment, was orally informed by the medical director for the Service Corporation that the Service Corporation had refused to assume liability for the plaintiff's bills. Dr. Smith, however, continued to treat her.

The defendant first contended that the plaintiff's action could not prevail because of the finding of Dr. Ostrom, medical director for the Service Corporation, that she had been injured while in the course of her employment. It was the defendant's claim that the Service Corporation's medical director had unrestricted authority under paragraph 8 of the medical aid contract to determine whether or not a member employee comes within its terms so as to be entitled to medical and hospital services. We believe, said the court, that the medical director of the Service Corporation had no authority to determine whether or not plaintiff's injuries were sustained in the course of her employment. This is a legal question which often presents serious difficulties. Considerable judicial opinion and editorial subject matter has been written in an effort to lay down an understandable rule determining whether one is or is not "injured in the course of employment." The Supreme Court then held that plaintiff's injuries were not sustained while she was in the course of her employment as an elevator operator but while she was an invitee entering the building preparatory to commencing her employment as an elevator operator and that the defendant's medical director was in error in refusing to certify her as one entitled to physician, nurse and hospital care

The Service Corporation next contended that liability could not attach to it for the reason that it was merely an agent of the several contracting parties and beneficiaries and not an insurer or guarantor of performance of the contract. The court said that the authority reserved to the Service Corporation was to make final decisions. This made the Service Corporation, not an agent of, but a co-principal with, the physicians, hospitals and employers, as contracting parties with the employee. The predominant purpose of the Service Corporation, as evidenced by paragraph 8 of its contract with the employers, said the court, is to control the business which its contract promotes and provides for, namely, the rendering of service to members and the collection of fees or premiums from such members in consideration therefor. The Service Corporation alone, of all the parties to the agreement, has the highest degree of exclusive control and authority over the business contemplated by the terms of the respective agreements When a person styling himself as an agent is named contracting party and reserves to himself the exclusive and binding authority to decide all questions presented by the contract, and when the exercise of such authority is, by express provision, made binding upon all parties to the contract, then, certainly, he is not an agent but is, in fact and in law, the principal and the *moving spirit in control* of every phase of the business contemplated by the contract. Continuing, the court said, there is no evidence of intention to delegate authority or control to the Service Corporation, either from the Seattle Chamber of Commerce in the standard group medical contract or from the Seattle General Hospital in the Hospital Service agreement. On the contrary, control, power and authority to conduct the business of the parties is expressly reserved and vested in the Service Corporation. Title to all money collected is expressly reserved in the Service Corporation as trustee. The defendant Service Corporation, under the terms of its own contract, is, of necessity, a principal. It derives no authority from any one. It is the fountainhead and primary source of authority. It is the trustee of the money collected by it. While it styles itself a charitable corporation, there is no reference to be found in any of the contracts relating to the disposition of any profits left in its hands over and above the disbursements made to physicians, hospitals and nurses. It should be noted that the Service Corporation, under the terms of its contract with the employer, collects all the money which is involved in the transactions covered by the contracts. It makes all remittances to the physicians, hospitals and nurses for the services furnished, at its instance, to employee members. The contract vests title to these funds in the Service Corporation. The court therefore concluded that the Service Corporation was a primary contracting party to each of the agreements under consideration and directly liable for violation of its contract by refusing, through its medical director, to accept and certify the plaintiff for all the benefits and services accruing to her under the contracts, as an employee-member of the medical aid groups.

Furthermore, the court held that the business being conducted by the Service Corporation meets the requirements of the insurance statute and that the corporation performs the functions of an insurer. It sells medical protection to working people against the hazard of injury or illness. It releases the employer from the care and expense of medical and health aid to its employees. It collects a fixed premium from each employee and reduces the respective rights and obligations of all the interested parties to a written contract. Through its medical director it determines when coverage applies to the employee—when it does not apply. All of this brings the business of the Service Corporation within the spirit and purpose of the insurance statutes.

Accordingly the court held that the plaintiff, as an employee member of the medical aid group, was entitled to hospitalization, nurse and physician care; that the King County Medical Service Corporation and the Seattle General Hospital are co-principals of the contract entered into between them and the Seattle Chamber of Commerce and that the Service Corporation is a trustee of the monies collected by it; that they are jointly and separately liable for the expense of the service administered to plaintiff; that the judgment against the Service Corporation and in favor of the plaintiff and his wife for the sums paid for nurses expense and the judgment denying the Seattle General Hospital recovery of the amount of its bill for hospital care incurred by the plaintiff were both proper. Accordingly the judgments of the lower court in favor of the plaintiff were affirmed.—*McCarty v. King County Medical Service Corporation, 175 P. (2d) 653 (Wash., 1946).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in The Journal Aug. 9, page 1262.

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I and II.* Various centers, Sept. 15-17. *Part III.* Durham, N. C., Oct. 21-23. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Part II. *Oral.* Cleveland, Oct. 5-11. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

American Board of Dermatology and Syphilology: *Part II. Written.* Various centers, Sept. 15. Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

American Board of Internal Medicine: *Oral.* Chicago, Oct. 8-10. Asst. Sec., Dr. W. A. Werrell, 1 West Main St., Madison 3.

American Board of Neurological Surgery: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

American Board of Obstetrics and Gynecology: *Part I. Written.* Various Centers, Feb. 6. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

American Board of Ophthalmology: Chicago, October 6-12. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

American Board of Orthopaedic Surgery: Part II. Chicago, Jan. 22-23. Final date for filing applications is Sept. 15. Sec., Dr. F. M. McKeever, 1136 W. Sixth St., Los Angeles 14.

American Board of Otolaryngology: Chicago, Oct. 7-11. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 24-25. Final date for filing application is Sept. 15. Sec., Dr. Robert A. Moore, Euclid Ave. and Kingshighway, St. Louis 10.

American Board of Pediatrics: Dallas, Dec. 5-7. Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

American Board of Plastic Surgery: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Louis T. Byars, 508 N. Grand Blvd., St. Louis.

American Board of Psychiatry and Neurology: *Oral.* New York, December. Final date for filing application is Sept. 15. Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S. W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, March. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia 2.

American Board of Urology: Chicago, *February.* Final date for filing application is Nov. 1. Sec., Dr. Harry Culver, 1409 Willow St., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

73:391-530 (April) 1947

*Postacidotic State of Infantile Diarrhea: Symptoms and Chemical Data. Postacidotic Hypocalcemia and Associated Decreases in Levels of Potassium, Phosphorus and Phosphatase in the Plasma. S. Rapoport, K. Dodd, M. Clark and I. Syllm.—p. 391.
Feeding of Premature Infants: Comparison of Human and Cow's Milk. H. H. Gordon, S. Z. Levine and Helen McNamara.—p. 442.
Erythema Infectiosum. M. J. Fox and J. M. Clark.—p. 453.
Juvenile Osteopetrosis: Metabolic Studies in 2 Cases and Further Observations on Composition of the Bones in This Disease. J. B. Pincus, I. F. Gittleman and B. Kramer.—p. 458.
Effect on Organisms of Children of Privations Caused by the Siege of Budapest. J. Bakucz.—p. 489.

Postacidotic State of Infantile Diarrhea.—Rapoport and his associates found in infants with diarrhea, in the period following cessation of acidosis and dehydration, low levels of calcium, potassium, phosphorus and phosphatase. The reduction of the ions is thought to be caused by their avid uptake by the previously depleted tissues of the body. The postacidotic phase of diarrhea is characterized by a clinical picture consisting of lethargy or irritability, convulsions, respiratory embarrassment, derangements of cardiac function, intracranial and gastrointestinal hemorrhages and generalized edema. Less often classic signs of peripheral tetany and of carpopedal and laryngeal spasms are seen. The clinical manifestations appear related primarily to the hypocalcemia, although possible effects of low values of potassium and phosphorus in the plasma cannot be gainsaid. Prematurity, malnutrition, severe diarrhea and acidosis of long duration, considerable fever, extensive dehydration and retention of waste nitrogen favor the occurrence of severe degrees of postacidotic manifestations and hypocalcemia. Correction of the acidosis by alkalizing agents may accentuate the tendency to the postacidotic disturbance. Calcium salts have been of benefit in preventing or curing the postacidotic phase of diarrhea.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

57:545-652 (May) 1947

Pneumoencephalogram of Cerebellar Atrophy. J. P. Murphy and R. Arana.—p. 545.
Hemangioma of Vertebra Associated with Spinal Cord Compression: Case Report. D. B. Foster and G. W. Heublein.—p. 556.
*Disseminated Granuloma Inguinale of Bones. W. J. Rhinehart and J. T. Bauer.—p. 562.
Eosinophilic Granuloma of Bone in Hand. W. M. Loehr.—p. 568.
Roentgenographic Demonstrations of Sinuses and Fistulae. R. C. Pendergrass and W. C. Ward.—p. 571.
Volvulus of Stomach Complicated by Peptic Ulcer. I. S. Silverstein.—p. 578.
Roentgenologic Aspects of Battle Injuries of Chest. M. Rakofsky and V. P. Satinsky.—p. 583.
Accessory Lobe of Liver and Significance of Roentgen Diagnosis. P. S. Friedman, L. Solis-Cohen and S. Levine.—p. 601.
Roentgen Findings in Acute Pancreatitis. J. C. Glenn Jr. and G. J. Baylin.—p. 604.
Dextrocardia with Complete Situs Inversus: Case Reports. S. Richman.—p. 616.
Fracture of a Sesamoid Bone of the Thumb: Report of a Case. D. L. Jellinger.—p. 619.

Disseminated Granuloma Inguinale of Bones.—A Negro woman aged 33 who had a foul bloody vaginal discharge gave a history of having had a supravaginal hysterectomy, bilateral salpingo-oophorectomy and appendectomy. The cervical stump of the uterus was almost completely destroyed by a soft ulcerating bleeding growth. Two biopsies of the vaginal wall revealed vascular granulative tissue but the underlying specific lesion of granuloma inguinale was not recognized. A nonfunctioning kidney was removed and a psoas abscess was drained. Later a third biopsy of the vaginal lesion revealed the characteristic specific granulomatous tissue consisting of many vacuolated macrophages filled with Donovan bodies, associated with scattered collections of polymorphonuclear cells. A careful review of previous vaginal and cervical biopsies disclosed occasional macrophages with Donovan bodies. Subsequently multiple bone lesions developed and the patient died. The results of the necropsy are described by Rhinehart and Bauer. Disseminated granuloma inguinale of bones is an uncommon condition characterized roentgenologically by osteolytic areas in the bones. In none of the cases so far reported are the x-ray changes specific for this disease. Diagnosis is best established by biopsy with search for macrophages containing Donovan bodies.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

31:239-344 (May) 1947

Effect of Hyperpyrexia on Therapeutic Efficacy of Penicillin in Experimental Syphilis. H. Eagle, H. J. Magnuson and R. Fleischman.—p. 239.
Observations on Therapeutic Efficacy in Experimental Syphilis of Calcium Penicillin in Oil and Beeswax and Their Bearing on Its Use in Man. H. Eagle, H. J. Magnuson and R. Fleischman.—p. 246.
Local Chemical Prophylaxis of Experimental Syphilis with Phenyl Arsenoxides Incorporated in Ointments and in Soap. H. Eagle, H. J. Magnuson and R. Fleischman.—p. 257.
Reinfection in Experimental Syphilis in Rabbits Following Penicillin Therapy. R. C. Arnold, J. F. Mahoney and J. C. Cutler.—p. 264.
*Treatment of Gonorrhea with Streptomycin. B. D. Chinn, L. E. Putnam, S. R. Taggart and R. P. Herwick.—p. 268.
Comparison of In Vitro Susceptibility of Gonococcus to Penicillins G and X. M. J. Romansky and E. V. D. Robin.—p. 271.
Chancroid in Women in Manila. Dolores G. LaO and R. E. Trussell.—p. 277.
Incidence of Asymptomatic Lymphogranuloma Venereum in a Municipal Hospital: Survey Based on 1,512 Cases. L. T. Wright, G. A. Spencer and A. Oppenheim.—p. 282.
Studies on the Complement Fixation Reaction in Lymphogranuloma Venereum. Margaret J. Wall, A. Heyman and P. B. Beeson.—p. 289.
*Treatment of Acute Gonococcic Urethritis with Single Subcutaneous Injections of Penicillin in Beeswax Peanut Oil. D. Frost, M. F. Allende, W. M. M. Kirby and H. S. Ginsberg.—p. 300.
Quantitative Macroprecipitation Test for Syphilis with Cardiolipin-Lecithin Cholesterol Antigen. Rachel Brown.—p. 304.
Reactivity of Tests Using Cardiolipin Antigens in a Limited Number of Nonsyphilitic Cases. G. W. Stout.—p. 314.
Vertigo as Presenting and Only Symptom in Neurosyphilis. B. J. Alpers.—p. 322.
Theoretical Considerations in Venereal Disease Control Planning. M. Leider.—p. 325.

Streptomycin Treatment of Gonorrhea.—Chinn and his associates gave each of 4 men with acute gonorrheal urethritis 0.1 Gm. of streptomycin sulfate dissolved in 3 cc. of isotonic solution of sodium chloride at hourly intervals for five doses. All were observed daily for three days after treatment and at the seventh and tenth days. All 4 responded promptly within twenty-four to forty-eight hours by a reduction or cessation of the urethral discharge. Cultures following prostatic massage at each examination were found negative. Later treatment with a single dose of 0.5 Gm. of streptomycin was attempted, and consistent cures could be obtained in this way. Single doses of 0.4 and 0.3 Gm. likewise proved effective in all of the cases, but smaller doses (0.2 or 0.1 Gm.) were not always effective. Patients failing to respond to streptomycin were cured with a second treatment of 0.2 Gm. of streptomycin or with penicillin.

Subcutaneous Injections of Penicillin in Beeswax-Peanut Oil in Gonococcic Urethritis.—Frost and his associates administered a single subcutaneous injection of 300,000 units of penicillin in beeswax-peanut oil to 200 patients with acute gonococcic urethritis; 177 (88.5 per cent) of these were cured, and 23 (11.5 per cent) were failures. . These results compare favorably with those obtained when penicillin-beeswax mixtures were administered by the intramuscular route. There was less discomfort at the time of injection with the subcutaneous than with the intramuscular route, but in a small percentage of cases in which the material was injected too superficially subcutaneous injections were followed by indurations, nodules and sterile abscesses. The detection of 11 of the 23 failures three weeks after treatment emphasizes the necessity of a minimum follow-up period, both clinical and bacteriologic, of at least twenty-one days. Single subcutaneous or intramuscular injections of 300,000 units of penicillin-beeswax-peanut oil 1 cc. constitutes the simplest and most satisfactory method of treating acute gonococcic urethritis available at present.

Annals of Surgery, Philadelphia

125:513-672 (May) 1947

Mortality of Surgical Disease. E. P. Lehman and W. F. Becker.—p. 515.
Primary Pulmonary Malignancy Treated by Resection: Analysis of 129 Cases. A. Ochsner M. E. DeBakey and L. Dixon.—p. 522.
*Present Status of Surgical Treatment of Carcinoma of the Lung. W. F. Rienhoff Jr.—p. 541.
A Concept of Toxic Goiter. W. Bartlett.—p. 566.
*Use of Thiouracil, Thiobatbital and Propyl Thiouracil in Patients with Hyperthyroidism. F. H. Lahey and E. C. Bartels.—p. 572.
Use of Thyroid Extract with Thiouracil in Preparation of Thyrotoxic Patient: Preliminary Report. R. M. Penick Jr.—p. 582.
Evaluation of Pulmonary Embolism Following Intravascular Venous Thrombosis. J. J. Morton and G. B. Mider.—p. 590.
Study of Malignant Cells with Phase Difference Microscopy. W. M. Firor and G. O. Gey.—p. 604.
Surgical Considerations in Treatment of Hypertension. W. McK. Craig and K. H. Abbott.—p. 608.
Chronic Shock: Problem of Reduced Blood Volume in Chronically Ill Patient: Concept of Chronic Shock; Hemoglobin and Red Blood Cell Deficits in Chronic Shock; Quantitative Aspects of the Anemia Associated with Malignant Tumors. J. H Clark, W. Nelson, C. Lyons, H. S. Mayerson and P. DeCamp.—p. 618.
Treatment of Injuries of the Brachial Plexus. L. Davis, J. Martin and G. Perret.—p. 647.
Should the Neck Nodes be Dissected in Patients with Carcinoma of Lip? R. D. McClure and C. R. Lam.—p. 658.
Present Status of Leg Length Discrepancy Problem. J. W. White.—p. 662.
Analysis of Pelvic Operations Preceding Hysterectomy: Causal Relationship. C. Tyrone.—p. 669.

Surgical Treatment of Carcinoma of the Lung.—Rienhoff records the clinical analysis, preoperative preparation, operative procedure and the immediate and remote postoperative results in a series of 327 consecutive cases of carcinoma of the lung which have been referred for surgical treatment. Chest roentgenograms were always positive. The presence of bronchogenic cancer should be inferred in every instance in which roentgenograms of the chest show a departure from normal and in which this departure is not characteristic of one of the commoner lesions of the lung. An infiltrating hilar shadow in a patient past middle age, associated with cough, hemoptysis and absence of tubercle bacilli in the sputum almost certainly indicates a bronchogenic carcinoma. Second to the roentgenogram in diagnostic importance is bronchoscopy. A positive diagnosis of primary carcinoma of the lung can be made by direct vision, by biopsy or by both. In 70 per cent of the patients in this series a positive biopsy of the cancer was obtained. Exploratory thoracotomy should be resorted to far more frequently than it has been in the past. In 70 per cent of the 112 patients in whom a total pneumonectomy was performed there were metastases to the bronchial and tracheal lymph nodes. This fact emphasizes the necessity of performing a total pneumonectomy with dissection of the regional nodes in order to effect a permanent cure. Treatment with penicillin and the induction of artificial pneumothorax is stressed in the preoperative treatment. Primary carcinoma of the lung can be satisfactorily treated by surgical removal of the entire organ. Surgical measures short of total pneumonectomy are not efficacious. Postoperative mortality and longevity are at least as good as, if not better than, the postoperative results following the surgical treatment of carcinoma of other organs.

Thiouracil, Thiobarbital and Propyl Thiouracil in Hyperthyroidism.—Lahey and Bartels say that experience with the use of thiouracil, thiobarbital and propyl thiouracil in 660 cases of hyperthyroidism during the last three and one-half years has shown that these drugs act by preventing the synthesis of an active thyroid hormone and by so doing lead to an increase in hyperplasia of the thyroid gland. If these drugs are used in adequate doses over a sufficient length of time they will restore the basal metabolic rate to a normal level. The comparative dose of thiouracil, thiobarbital and propyl thiouracil is 600 mg., 50 mg. and 200 mg. respectively. Since the percentage of reactions is 9 for thiouracil, 28 for thiobarbital and 2 for propyl thiouracil, the last named agent is the drug of choice. Since propyl thiouracil may cause depressive changes in the white blood cells, its administration must be followed with white and differential blood counts made every ten to fourteen days during treatment. The treatment of agranulocytosis consists in the early administration, intramuscularly and by nasal and throat spray, of adequate doses of penicillin. The increase in the vascularity of the thyroid caused by these drugs makes thyroidectomy difficult, but the simultaneous use of iodine largely overcomes this difficulty. These antithyroid drugs produce prolonged remissions of mild primary hyperthyroidism, but little hope can be held for a permanent remission in patients with severe primary hyperthyroidism with a large gland. Since the mortality of thyroidectomy is now almost nil, surgical removal after proper preoperative treatment seems to be the treatment of choice for hyperthyroidism.

Archives of Otolaryngology, Chicago

45:377-502 (April) 1947

Pedicled Pericranial Grafts for Repair of Dural Tears in Anterior Fossa of the Skull. A. D. Ecker.—p. 377.
Otolaryngologic Experiences in the Philippines. S. A. Friedberg.—p. 385.
Pentothal Sodium and Combination of Pentothal Sodium and Curare as an Anesthetic for Tonsillectomy. R. B. Robertson.—p. 392.
Interrelationship of Hydrogen Ion Concentration, Electrolyte Contents and Colloids in Permeability of Membranes: Calcium Sulfathiazole in Nasal Therapy. S. L. Ruskin.—p. 398.
Pressure Treatment of Allergic Sinusitis. J. M. Robison.—p. 405.
Friedlaender's Bacillus Meningitis Secondary to Otitis Media: Report of a Case with Recovery and Review of Literature. A. D. Ghiselin and R. B. Robertson.—p. 432.
Classic and Other Types of Tracheotomy. R. Waldapfel.—p. 446.
Tumors of Nose and Throat. G. B. New and E. L. Foss.—p. 483.

Canadian Medical Association Journal, Montreal

56:475-594 (May) 1947

Optic Atrophy in Hong Kong Prisoners of War. P. G. Bell and J. C. O'Neill.—p. 475.
Residual Disabilities in Hong Kong Repatriates. J. D. Adamson, P. K. Tisdale, D. C. Brereton and L. W. B. Card.—p. 481.
Preoperative and Postoperative Care of Intestinal Obstruction. H. R. Robertson.—p. 487.
Anesthetic Emergencies. A. B. Noble.—p. 490.
*Influenzal Meningitis. H. S. Little.—p. 496.
*Infectious Mononucleosis: Complications. F. S. Brien.—p. 499.
Hemoglobin Levels in Canadian Population Groups: Children and Young Women. W. W. Hawkins, H. J. Leeson and E. W. McHenry.—p. 502.
Cyanosis in Infants in Rural Areas: Well-Water Methemoglobinemia. H. Medovy, W. C. Guest and M. Victor.—p. 505.
Headache: Treatment with Histamine. W. Leslie and F. A. Dunsworth.—p. 509.
Roentgenologic Localization of Ureteral Obstruction by Non Radiopaque or Indistinguishable Calculi. G. Gill and W. Light.—p. 513.
Alloxan Diabetes. B. A. Houssay.—p. 519.
Notes on Cholecystectomy. D. Macdonald.—p. 523.
Mucosal Respiratory (Stevens-Johnson) Syndrome. W. K. Lindsay.—p. 527.
Skin Tests in Dermatology. B. Kance.—p. 529.
Pediatric Endocrinology. G. A. Campbell and P. J. Maloney.—p. 533.

Influenzal Meningitis.—According to Little, influenzal meningitis is confined almost entirely to infancy and early childhood. Twelve of the group of 13 patients reviewed in this paper were less than 4 years old. Best results in the treatment of meningitis due to Hemophilus influenzae are obtained by the use of one of the sulfonamides with type specific antiserum. With this treatment the fatality rate has been lowered from 95 to 50 per cent and less. Every patient should be given both sulfonamide therapy and serotherapy as soon as a diagnosis has been made.

Complications of Infectious Mononucleosis.—According to Brien infectious mononucleosis ordinarily is not difficult to recognize, and complications are regarded as exceptional. However, the condition may be confused with secondary syphilis, German measles, typhus and acute leukemia. A study of the blood picture usually settles the question. The disease may become complicated by cardiac disorders, bronchitis, albuminuria, hematuria and hepatic and splenic disorders. Spontaneous rupture of the spleen is an unusual occurrence; 7 such cases have been observed in the American army, 1 in the British and 2, which are briefly described, occurred in the author's wards in a Canadian army hospital. The central nervous system may become involved in the form of meningitis, encephalitis or both. Pain in the back of the neck is not uncommon in cases with posterior cervical glandular involvement, and at times it is accompanied with voluntary rigidity, which simulates that seen in meningitis.

Iowa State Medical Society Journal, Des Moines

37:187-222 (May) 1947

The Doctor's Role in Public Relations. R. L. Parker.—p. 187.
Leadership in Medicine. H. A. Spilman.—p. 189.
Hemipelvectomy in Treatment of Osteogenic Sarcoma of Ilium. L. T. Palumbo.—p. 190.
Preliminary Report on Transvaginal X-Ray Treatment of Carcinoma of Cervix. H. B. Elkins.—p. 196.
Adhesive Arachnoiditis Following the Intrathecal Administration of Penicillin. C. H. Millikan and A. L. Sahs.—p. 198.
Use of Caydal Anesthesia in Obstetrics. D. Wall.—p. 201.
The Doctor's Role in the Postwar World. A. W. Adson.—p. 203.

37:223-262 (June) 1947

Uterine Bleeding. G. D. Royston.—p. 223.
Advances in Medical and Surgical Treatment of Primary Glaucoma. R. M. Wolfe.—p. 231.
Fetal and Neonatal Deaths. R. E. Weland.—p. 234.
Nutrition in Pregnancy. E. S. Eppright.—p. 237.
The Indispensable Man. W. M. Sproul.—p. 240.

Journal of Gerontology, Springfield, Ill.

2:1-92 (Jan.) 1947

Bill of Rights for Old Age. G. Lawton.—p. 1.
Research in Cardiovascular Diseases. A. E. Cohn.—p. 11.
Length of Life in Ancient Greece. J. L. Angel.—p. 18.
Oral Glucose Tolerance Test in Old Men. S. M. Horvath, R. Wisotsky and W. Corwin.—p. 25.
Program of Research on Aging of the Skin. E. V. Cowdry, Zola Cooper and W. Smith.—p. 31.
Pathologic Changes of Old Age. G. Strassmann and T. Krush.—p. 45.
Conditions Desirable for Rapid Progress of Gerontological Research. V. Korenchevsky.—p. 54.
Chronic Progressive Subcortical Encephalopathy: Report of a Case. Meta A. Neumann.—p. 57.

Journal of Nutrition, Philadelphia

33:491-600 (May) 1947

Growth of Odontoblasts of Incisor Tooth as Criterion of Vitamin C Intake of Guinea Pig. E. W. Crampton.—p. 491.
Renal Threshold for Ascorbic Acid: Modified Method for Estimation with Results for 12 Adult Subjects. Ann M. Klosterman, J. Estelle *Haines, Hazel M. Hauck and Alice B. Kline.—p. 505.*
*Plasma Levels and Urinary Excretion of Ascorbic Acid in Women During Menstrual Cycle. Hazel M. Hauck.—p. 511.
Biotin Balance in Albino Rat. Margaret A. McGregor, Helen T. Parsons and W. H. Peterson.—p. 517.
Study of Ascorbic Acid Metabolism of Adolescent Children. Clara A. Storvick, Margaret L. Fincke, Jeanne P. Quinn and Bessie L. Davey. —p. 529.
Study of Sex Differences in Composition of Rats, with Emphasis on *Lipid Component: Sex Difference in Susceptibility to Essential Fatty* Acid Deficiency with High and Low Fat Diets. H. G. Loeb and G. O. Burr.—p. 541.
Amino Acid Content of Feeds: I. Leucine, Valine, Isoleucine and Phenylalanine. B. S. Schweigert.—p. 553.
Role of B_6 Deficiency in Tryptophan Niacin Relationships in Rats. F. Rosen, J. W. Huff and W. A. Perlzweig.—p. 561.
*Effect of Fat Level of Diet on General Nutrition: I. Growth, Reproduction and Physical Capacity of Rats Receiving Diets Containing Various Levels of Cottonseed Oil or Margarine Fat ad Libitum. H. J. Deuel Jr., Emily R. Meserve, Evelyn Straub, Cornelia Hendrick and B. T. Scheer.—p. 569.
Id.: II. Growth, Mortality and Recovery in Weanling Rats Maintained on Restricted Calories. B. T. Scheer, Dorothy F. Soule, M. Fields and H. J. Deuel Jr.—p. 583.
Net Protein Value of Food Yeast. J. A. Goyco and C. F. Asenjo. —p. 593.

Vitamin C and the Menstrual Cycle.—In 10 women whose ascorbic acid metabolism was studied for a total of twenty-three periods of from four to six weeks duration, during which thirty menstrual periods occurred, Hauck found no evidence of unusual variability in either urinary excretion of ascorbic acid or fasting plasma ascorbic acid values associated with the menstrual cycle.

Dietary Fat Level and Nutrition.—Deuel and his associates show that ad libitum feeding to rats of diets varying in fat content from 5 to 50 per cent (10 to 70 per cent of total calories) results in better growth, greater physical capacity and better reproductive and lactation performance than does feeding of diets containing minimal amounts of fat. Optimum growth was observed on diets containing 20 to 40 per cent fat. The most pronounced differences were observed in males. The effects are in part, but not entirely, attributable to greater caloric intake of the diets containing fat.

J. of Pharmacology & Exper. Therap., Baltimore

89:297-394 (April) 1947

Pharmacology of Vasodepressor Compounds Structurally Related to the Sympathomimetic Amines. A. M. Lands. E. E. Rickards. V. L. Nash and K. Z. Hooper.—p. 297.
Effect of Perfusion Through Isolated Liver on the Prothrombin Activity of Blood from Normal and Dicumarol Treated Rats. A. M. Lupton. —p. 306.
Cardiovascular Effects of Sodium Caprylate in the Cat. H. M. Kipple, M. S. Waldman and V. E. Hall.—p. 313.
Mechanism of Paralysis Resulting from Toxin of Clostridium Botulinum: *Action of Toxin on Acetylcholine Synthesis and on Striated Muscle.* Clara Torda and H. G. Wolff.—p. 320.
Studies on Veratrum Alkaloids: VII. Receptor Areas in the Coronary Arteries and Elsewhere as Revealed by Use of Veratridine. G. S. Dawes.—p. 325.
Effect of BAL and BAL-Glucoside Therapy on the Excretion and Tissue Distribution of Injected Cadmium. Helen M. Tepperman.—p. 343.
Central and Autonomic Effects Following the Combined Administration of Sodium Arsenite and 2,3-Dimercaptopropanol (BAL). T. Koppanyi *and F. Sperling.—p. 350.*
Comparative Central Depressant Actions of Some 5-Phenyl-5-Alkyl Barbituric Acids. G. A. Alles, C. H. Ellis, G. A. Feigen and Mildred A. Redemann.—p. 356.
3′,5′-Dibromosulfanilanilide: Toxicity, Absorption and Metabolism. E. W. McChesney.—p. 368.
Effect of Thorotrast on Anaphylactic Shock in the Dog. A. Goth and J. Holman.—p. 379.
Pharmacologic Activity of N-Methyl-Beta-Cyclohexylisopropylamine Hydro*chloride. A. M. Lands, V. L. Nash, H. R. Granger* and B. L. Dertinger.—p. 382.

New England Journal of Medicine, Boston

236:647-682 (May 1) 1947

Human Laboratory Infection with Venezuelan Equine Encephalomyelitis Virus: Report of 4 Cases. H. Koprowski and H. R. Cox.—p. 647.
Survey of First Three Months of Operation of a Veterans Administration Mental Hygiene Clinic. M. H. Adler and E. M. L. Burchard. —p. 654.
*Creeping Eruption in New England: Report of 2 Cases. C. U. Lowe and D. L. Augustine.—p. 658.
Surgery of Autonomic Nervous System. R. H. Smithwick.—p. 662.
Periarteritis Nodosa. Diffuse Cortical Necrosis.—p. 670.
Congenital Tracheobronchial Cyst of Esophageal Wall.—p. 672.

Creeping Eruption in New England.—Lowe and Augustine say that, although creeping eruption is frequent in tropical and subtropical countries, this infection has been reported only once before in New England. One of the 2 cases of creeping eruption reported here was caused by Ancylostoma caninum of canine origin and was acquired in Boston. The second case, acquired in Georgia and observed in Boston, was probably caused by Ancylostoma braziliense. In view of the fact that Ancylostoma caninum is a relatively frequent parasite of dogs in New England, the question arises concerning the reason for the rarity of creeping eruption in the human population. The lack of a sufficient number of consecutive days with favorable temperature and moisture for larval growth of the parasite in New England soil, together with high hookworm infections in the dogs, does not permit the development of a heavy soil infection under most circumstances. Only in kennels and under unusual conditions, such as those in case 2, are soil infections likely to become sufficiently heavy and concentrated to cause creeping eruption.

Pennsylvania Medical Journal, Harrisburg

50:801-904 (May) 1947

Rupture of Uterus. J. S. Taylor.—p. 801.
Diabetes Mellitus: Analysis of 250 Cases and Discussion of Simplified Procedures for Regulation. W. J. Stainsby and J. A. Collins Jr. —p. 808.
Prostatitis and Seminal Vesiculitis: Acute and Chronic. T. R. Fetter. —p. 812.
Public Relations of American Medical Association: Then and Now. H. H. Shoulders.—p. 823.
Our Efforts to Win Public Good Will. T. Wiprud.—p. 827.
Public Relations Activities of a County Medical Society. L. H. Criep. —p. 831.
Improved Public Relations. W. F. Irwin.—p. 833.
Answer of a Smaller County Medical Society. N. K. Beals and J. A. Welty.—p. 836.
A County Medical Society's Public Relations. G. R. Good.—p. 838.
Saga of a County President. Alice E. Sheppard.—p. 840.
Progress Report of the Medical Service Association of Pennsylvania *for 1946. L. T. Buckman.—p. 843.*

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

31:257-320 (May) 1947

The Trochlear Nerve in Human Embryo and Fetus. E. R. A. Cooper. —p. 257.
Color Vision in Consulting Room. F. R. Neubert.—p. 275.
A Survey of Esophoria and Ciliary Spasm. G. Irvine.—p. 289.
Contact Lenses in Excelsis. A. H. Briggs.—p. 304.

31:321-384 (June) 1947

Binocular Vision. Dorothy Campbell.—p. 321.
Regeneration of Wounds of External Membrane of the Eye in the Light of New Pathologicoanatomic Results. E. Levkoieva.—p. 336.
*Panophthalmitis in Premature Infant Treated by Streptomycin. L. B. Somerville-Large.—p. 362.
Meningeal Reactions in Sympathetic Ophthalmitis. L. Corcelle.—p. 366.
Conjunctivitis Due to Exposure to Dimethyl Sulfate. H. J. Stern. —p. 373.

Panophthalmitis in Premature Infant Treated with Streptomycin.—Somerville-Large reports the development in a premature infant weighing 4 pounds 5 ounces (1,955 Gm.) at birth of panophthalmitis following umbilical cord infection by Bacillus proteus, an organism resistant to penicillin and sulfonamides but highly sensitive to streptomycin. One Gm. of streptomycin was dissolved in 10 cc. of sterile water and 1 cc. was injected intramuscularly every three hours for a total of twenty-one hours. The dose was then reduced to 0.5 cc. three hourly for sixty-six hours and further reduced to 0.25 cc. every three hours until a total of 2.5 Gm. had been given. The treatment with streptomycin covered a period of six and a half days. On the ninth day from the commencement of streptomycin the globe perforated. Evisceration was carried out on the same day. The vitreous was found to be grossly infected. Swabs from the site of perforation, from the anterior chamber and from the vitreous were found to be sterile on culture. By the finding of Bacillus proteus in the anterior chamber prior to commencement of streptomycin treatment, and by the negative cultures obtained from the highly infected globe after treatment, it may be inferred that this drug is capable of permeating the uveal tissue. Three and a half months later the child was in good health. The streptomycin treatment had no ill effects.

British Journal of Radiology, London

20:129-176 (April) 1947

Experiences with Bone Tumors. F. F. Brailsford.—p. 129.
Industrial Skin Cancer, with Special Reference to Pitch and Tar Cancer. I. Hieger, S. A. Henry, P. Ross and J. G. Winternitz.—p. 145.
Standardized Radiologic Pelvimetry: III. New Method of Measuring the Outlet. E. P. Allen.—p. 164.

20:177-220 (May) 1947

Provisional Calculation of Tolerance Flux of Fast Neutrons. J. S. Mitchell.—p. 177.
Accuracy in Radon Work. F. Ellis, W. A. Jennings and S. Russ. —p. 181.
Surfaces of Equal Sensitivity Near the Window of a G. E. C. Geiger Counter Type G. M. 2. J. L. Putman and R. H. Boxall.—p. 190.
X-Ray Diagnosis of Cholesteatoma in Temporal Bone. S. Welin.—p. 192.
Cholesteatomata of Temporal Bone. H. K. G. Hodgson.—p. 202.
Standardized Radiologic Pelvimetry: Interpretation of Pelvimetry. E. P. Allen.—p. 205.

Medical Journal of Australia, Sydney

1:481-516 (April 19) 1947

Nutrition Survey of Tasmania: Vitamin C Nutritional Status in the Spring of 1945 and Autumn of 1946. Vivienne Pecover, Thelma J. Norris and F. W. Clements.—p. 481.
*Dental Caries: Public Health Aspects of Control by Fluorine. N. D. Martin.—p. 486.
The Pelvic Fascia: Significance to the Surgeon. W. J. Close.—p. 490.

1:517-544 (April 26) 1947

The Control of Tuberculosis in Tasmania. T. H. Goddard.—p. 517.
Solar Photophthalmia. J. M. Dwyer.—p. 523.
The Normal Leukocyte Count. C. R. B. Blackburn.—p. 525.
Postoperative Flatulence or "Gas" Pains. V. J. Kinsella.—p. 528.
Administration of Nebulized Solutions of Penicillin. R. H. Orton. —p. 529.

Fluorine in Control of Dental Caries.—The results of epidemiologic investigations indicate that there exists an inverse relationship between the incidence of dental caries and the fluorine content of the water supply. A number of studies are in progress in the United States and in Canada to test the effectiveness of controlling caries by the fluorination of the water supplies. As the results of these studies will not be available for ten to twelve years, Martin considers it expedient that similar studies be commenced in Australia. It is assumed that the alteration of the fluorine concentration of the domestic water supplies to 1 part per million would be sound public health practice. The addition of sodium fluoride to water supplies presents no technical problems to the water works engineer. Automatic chemical feeding equipment which will add the requisite amount of sodium fluoride to the water (20½ pounds of sodium fluoride to a million gallons of fluoride-free water) is available and is inexpensive.

Presse Médicale, Paris

55:293-304 (May 3) 1947

*Frontiers and Atypical Forms of Besnier-Boeck Shaumann's Disease. L. M. Pautrier. p. 293.
*Effects of Castration on Metastases of Cancer of Breast. A. Sicard. —p. 294.
Prophylaxis of Postoperative Shock. M. Larget, J. Guilleminot and P. Grigaut.—p. 295.

Besnier-Boeck-Schaumann's Disease.—Pautrier points out that in recent times descriptions have appeared under the designation of Besnier-Boeck-Schaumann's disease of transitional types of atypical cases, establishing apparent relations between this disease and tuberculous lupus, erythematous lupus, the tuberculids, the hypodermic sarcoids of Darier-Roussy, disseminated follicular lupus and erythema nodosum. The same has been done with regard to the pathologic aspects resulting in overlapping with Hodgkin's disease or with mycosis fungoides. The author feels that the situation is deplorable in view of the fact that Besnier-Boeck-Schaumann's disease represents a well defined clinical and histologic entity.

Effects of Castration on Metastases of Mammary Cancer.—On the basis of observations on 11 patients with mammary cancer, Sicard concludes that in young women as well as in women beyond the menopause castration plays an important role in the evolution of metastases of cancer of the breast. It rapidly suppresses pains produced by bone and lymph node metastases, improves the general condition and temporarily stabilizes the lesion. Surgical castration seems to give much better results than does castration effected by irradiation. Treatment with testosterone proved ineffective in 2 cases.

Acta Chirurgica Scandinavica, Stockholm

95:193-290 (Feb.) 1947. Partial Index

*Total Resection of Carcinomatous Stomach. H. Wahren.—p. 193.
Malignant Nasopharyngeal Tumors Manifesting Themselves as Parotid Tumors. E. Godtfredsen.—p. 205.
Treatment of Cancer of Colon. K. A. Hultborn.—p. 215.
Drainage in Operations on the Bile Passages. H. Haldbo.—p. 265.
New Method of Treating Capillary Hemangiomas. G. Jōnsson.—p. 275.
Postoperative Emptying Difficulties in Direct Connection with Gastric Resection. I. R. Sandberg.—p. 285.

Total Resection of Carcinomatous Stomach.—Wahren reviews observations on 9 patients, 8 men and 1 woman, who had cancer in the corpus portion of the stomach and had been treated by total resection. All of them were discharged from the hospital in good condition. The first death occurred from metastasis in the liver four months after discharge from the hospital. Three other patients died within a year after the operation. The author describes the technic of total resection and discusses the vascular supply of the anastomosis. He thinks that surgeons who have carefully studied the technic of total resection of the stomach need not anticipate a higher mortality rate than that occurring in partial resection. The operation ought to be used for cancer in the fornix and within the upper portion of the corpus as well as in certain scirrhoid processes. It is doubtful whether all cases of cancer of the stomach should be treated by radical resection. When one takes into consideration that cancer within the stomach is diagnosed at a late stage, it is far too optimistic to expect decidedly better results until the disease can be diagnosed in its precancerous stage.

Book Notices

Human Factors in Air Transport Design. By Ross A. McFarland, Ph.D. Cloth. Price, $6. Pp. 670, with illustrations. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 18, 1946.

This book was written for a purpose planned by the author over the last twenty years and for which there has been and is a very real need. It should be in the library of all physicians interested in aviation medicine as well as in the library of air line executives, especially those in the engineering and planning department, and at any school, such as the Massachusetts Institute of Technology and the California Institute of Technology, where aeronautical engineering is taught.

The accomplished aims of the author are to present factual information on all aspects of air transport design influencing those who operate the planes or travel by air, to furnish whatever interpretative background is necessary to show how a given physical variable creates a human problem and to offer recommendations or possible solutions concerning the human factors in air transport design. A summary is presented at the end of each chapter for those who do not wish to follow the more detailed exposition.

In the first chapter the author presents an analysis of the trends and characteristics of the aircraft industry, including the future technical developments and their implications. Subsequent chapters include flight at high altitude and pressurized cabins; the control of ventilation, temperature and humidity; the control of insects and air borne diseases; carbon monoxide and other noxious gases; the control of noises and vibration; acceleration, motion and flight performance; the cockpit and control cabin; passenger accommodation, and the prevention of aircraft accidents.

The most important point that the author desired to stress, that is, the demonstration of the fundamental importance of interaction of human and physical variables in the design and operation of air craft, has been accomplished. The necessity for reducing the time lag between research and its application has been repeatedly stressed. Undoubtedly subsequent editions will include a great deal of information that is on the restricted list of the army and navy air forces and British air forces at the time of publication.

Henrici's Molds, Yeasts, and Actinomycetes: A Handbook for Students of Bacteriology. By Charles E. Skinner, Ph.D., Assistant Professor of Bacteriology, University of Minnesota, Minneapolis, Chester W. Emmons, Ph.D., Principal Mycologist, Division of Infectious Diseases, National Institute of Health, Bethesda, Maryland, and Henry M. Tsuchiya, Ph.D., Research Associate, Division of Microbiology, Hormel Institute, University of Minnesota, Austin. Second edition. Cloth. Price, $5. Pp. 409, with 136 illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W. C. 2, 1947.

The well known book by Henrici has been brought out in a second edition by three investigators, experts in their respective fields. The comparatively meager literature in the English language on the subject of fungi and actinomycetes as causative agents of human and animal diseases is receiving in this book most expert consideration. In addition, the authors present a detailed discussion of the utilization of fungi, yeasts and actinomycetes for industrial and food purposes. It is sufficient to list the subjects of the chapters to give an idea of the broad scope of this book: structure and classification of the fungi; variations in the lower fungi; methods for studying molds, yeasts and actinomycetes; molds belonging to the Phycomycetes; molds belonging to the fungi imperfecti and the Ascomycetes; fungous diseases of man and animals; infections caused by molds; biologic activities of molds; morphology and classification of the yeasts and yeastlike fungi; pathogenic yeastlike fungi; biologic activities of yeasts; classification, morphology and biologic activities of the actinomycetes; actinomycosis; antibiotic substances. Each chapter is followed by a selected bibliography. The book is exceptionally well written and carefully illustrated, mostly by photographs made by the late Dr. Henrici himself. The book can be read very easily. Although it is primarily designed as a textbook for students specializing in the field, many physicians interested in the subject of applied mycology, especially of fungi as causative agents of diseases, will find the book a valuable addition to their library.

Experiences with Folic Acid. By Tom D. Spies, M.D., Associate Professor of Medicine, University of Cincinnati School of Medicine, Cincinnati. Cloth. Price, $3.75. Pp. 110, with 38 illustrations. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

This monograph records, in a group of essays, the historical data leading to the use of folic acid in the treatment of macrocytic anemias. The presentation differs from most American scientific works in that the personal experience of the author is given in the first person, with his interpretation and evaluation of the data as they evolved. There are four excellent colored plates. The author concludes that folic acid, while increasing the number of red blood cells in pernicious anemia, "does not always prevent the occurrence of combined system disease nor does it reverse the degenerative process once it has begun." He concludes that for the present, until more discoveries are made, "liver extract is the safest and most effective therapeutic agent for the routine treatment of pernicious anemia." The author purposely omitted a comprehensive report on all the earlier work in the treatment of anemia in which substances were used which might now be found to contain "folic acid."

The booklet will be helpful to any one who does not have available the extensive publications of Dr. Spies in numerous medical journals in this country and abroad.

Therapeutic Exercise. By F. H. Ewerhardt, M.D., Assistant Professor of Physical Medicine, Washington University School of Medicine and Barnes Hospital, St. Louis, Missouri, and Gertrude F. Riddle, B.S., R.N., R.P.T. Fabrikoid. Price, $2.50. Pp. 132, with 8 illustrations. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1947.

This treatise is concise and well presented. It gives the functional treatment of joint structure and mechanics and an adequate coverage of muscle anatomy and physiology. There is an excellent chapter on the brachial and lumbosacral plexus, including a brief clinical discussion of peripheral nerve lesions. The remaining half of the book deals with the physiology and application of therapeutic exercise in general and specifically as applied to different areas and for various disabilities including weak feet, relaxed abdominal wall, scoliosis and posture in general. Separate chapters are devoted to poliomyelitis and spastic paralysis. The book can be highly recommended to physical therapeutists and general practitioners. Unfortunately, as in most textbooks on physical medicine, the collaboration of an orthopedic surgeon is lacking. Such an approach to the subjects covered would more clearly indicate the objectives sought for and the results which can reasonably be expected from physical therapeutics. Unfortunately weight resistance exercises are only mentioned and not discussed.

Diabetes Mellitus in Bergen 1925-1941: A Study of Morbidity, Mortality, Causes of Death and Complications. By Per Hanssen. Also published as Supplement, Acta medica scandinavica, 1946. Translated from Norwegian to English by Claude Lillingston, M.D. Paper. Pp. 179. Johan Grundt Tanum Forlag, Oslo, 1946.

This monograph is unique. It is an intimate study of diabetes in Bergen over a period of sixteen years. Interwoven in its pages are instructive comments on all phases of the disease and valuable references to the literature. The author is particularly well trained to prepare this review and analysis of diabetes because of his broad education at home and his association with Hagedorn in Denmark. The volume is a valuable contribution to the incidence of diabetes in a community particularly suited to such an investigation because of its stable population, but, more than this, brings out the fallacies inherent in estimations of diabetic morbidity from records of diabetic mortality. The author is obviously so well versed in statistical studies of diabetes that all who read his report cannot refrain from the hope that he will continue his interest in this disease and extend it by a more modern approach to the solution of diabetic morbidity by instituting a survey of the true incidence of diabetes in Bergen based on analyses of sugar in the urine and blood of a liberal section of Bergen's population. The results, when compared with the knowledge of diabetes in Bergen already acquired, would be of worldwide significance. What is needed today is the discovery of latent, early, mild diabetes, the victim of which is only too frequently the relatively impecunious diabetic citizen, because these are the very ones for whom treatment can accomplish the most.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

TETANUS AFTER HUMAN OR DOG BITES

To the Editor:—There has been considerable discussion among our medical staff as to the administration of tetanus antitoxin in cases of wounds caused by human bites. Any institution for the mentally ill has quite a number of such cases. There seems to be little information in the literature or current textbooks available in our library concerning this subject. Is it advisable that tetanus antitoxin be administered to patients whose wounds are caused by bites inflicted by other patients?

Daniel Halfron, M.D., Elgin, Ill.

To the Editor:—I would appreciate information regarding the necessity for giving tetanus antitoxin following dog bites.

Samuel B. Hughes, M.D., Wildwood, N. J.

Answer.—1. A review of the available literature and of the statistics of several hospitals which admit a not inconsiderable number of patients with tetanus indicates that tetanus from human bites does not occur. Consequently tetanus antitoxin is not needed in the care of human bites. In view of the high incidence of human bites among inmates of institutions for the mentally ill, it might be advisable to cover all problems related to tetanus by a program of active immunization with tetanus toxoid. Three doses of fluid tetanus toxoid (1 cc. at two week intervals) or two doses of alum precipitated tetanus toxoid (0.5 cc. at monthly intervals), supplemented by a small booster dose (0.1 cc. of fluid or alum precipitated tetanus toxoid) in the event of injuries, would cover all exigencies, including the hypothetical occurrence of tetanus from human bites.

2. The available evidence indicates that tetanus from dog bites does not occur. If the tissues are contaminated with dirt or other material considered likely to harbor spores of the bacillus of tetanus, a prophylactic dose of 10,000 units of tetanus antitoxin cannot be condemned. The average dog bite does not require antitetanic serum. Obviously there is no harm associated with the injection of a small booster dose of tetanus toxoid (0.1 cc. of either fluid or alum precipitated material) into a patient who has been immunized previously with the material. However, in most instances it is not required. Tetanus antitoxin, in contrast to tetanus toxoid, may induce serum sickness. The latter, because of sundry factors, might lead to the abandonment of rabies inoculations. Obviously, active immunization against rabies following the infliction of a dog bite is of more importance than protection against tetanus.

SLOW HEART RATE AFTER EXERCISE

To the Editor:—What interpretation should be placed on the lack of rapid heart action after a period of exercise? To be specific: I have on several occasions observed that apparently healthy young men (U. S. Navy applicants) may show an initial pulse rate of 80 per minute, and after a standardized exercise test their pulse may be only 88 per minute whereas the average man's pulse would be 110 to 120 per minute. What conclusion should be drawn from prolonged rapid heart action following exercise? What conclusion should be drawn from drop in pulse rate and/or blood pressure following exercise?

E. J. Sullivan Jr., Lieutenant (jg) M.C., U.S.N.R.

Answer.—The failure of the heart rate to be much elevated after excercise is in most instances in young people a favorable sign of physical fitness and athletic training. The same is true of the rapid reduction of pulse rate on resting during the first two minutes after exercise. The maintenance of prolonged rapid heart action after exercise can be the result of overstrain of an abnormal heart, but it is more commonly the result of poor physical condition or of nervousness. In rare cases heart block may be responsible for a drop in pulse rate immediately after exercise. In such cases electrocardiographic study should be made. However, in certain athletes the sudden development of sinoauricular block with the halving of the pulse rate or close to it can occur within a minute after some exercise, such as a hundred yard dash, and in such cases is a favorable and economical physiologic mechanism.

The effect of exercise on the blood pressure may be quite similar to the effect on heart rate, but these effects often are not parallel; if the heart is weak or a state of collapse is produced the blood pressure may fall abruptly.

POISONOUS MOLLUSKS

To the Editor:—In The Journal, March 8, 1947 on page 708 under Medical News of Alaska I find a note regarding "Survey of Alaskan Clams." This note mentions Gonyaulax catenella in the clams found in southeastern Alaskan waters. The toxin from Gonyaulax is mentioned as causing paralytic poisoning, and it is noted that the federal Food and Drug Administration does not allow the sale of shellfish showing even a minimum amount of the toxin. May I ask for further information on this organism? Is it classed with the so-called plankton? Is it the same one which has caused trouble along the Oregon, California and Washington coasts at certain times of the year? How is the toxin determined?

Captain (MC), U. S. Navy.

Answer.—A paralytic toxin has been found at certain times in mollusks, particularly clams and mussels, along the coast of California, Oregon, Washington, both the East and West coasts of Canada and the coast of Alaska. According to Sommer and others the primary source of this toxin along the West Coast of the United States is a plankton organism, the dinoflagellate Gonyaulax catenella, which is utilized as food by the mollusks. However, the presence of this organism has not always been demonstrated elsewhere in areas where toxic clams and mussels have occurred. Regardless of the primary source, the toxins found so far in poisoned mollusks have similar if not identical pharmacologic properties.

There is no known chemical test for the identification or the determination of the toxin, so that biologic assay is necessary. In brief, this assay is carried out as follows: One hundred Gm. of the fresh meats are finely ground, mixed with 100 cc. of tenth normal hydrochloric acid, brought rapidly to boiling and boiled for five minutes. After cooling, centrifuging and adjusting the p_H to 4 to 6 if necessary, 1 cc. of the supernatant liquid is injected intraperitoneally into each of three 20 Gm. mice. The symptoms and time of death are noted. A mouse unit has been defined as that amount of toxin which when contained in 1 cc. will kill a 20 Gm. mouse in ten to twenty minutes. Since there is a relationship between death time and potency of the toxin, it is possible to approximate the potency from the average death time of the mice.

The Food and Drug Administration has advised the industry to refrain from taking clams from beds where more than the minimum demonstrable amount of toxin (200 mouse units) is present.

ADIPOSIS DOLOROSA

To the Editor:—Is there any treatment for adiposis dolorosa? My patient is a woman aged 30 with several children. Physical examination is not remarkable except for painful fatty deposits. The history reveals only pain, headache and periods of amenorrhea at times for several months. The basal metabolic rate is —9; chest films are normal. The blood shows a mild secondary anemia.

Luther B. Lowe, M.D., Chattahoochee, Fla.

Answer.—The pain in adiposis dolorosa sometimes disappears with loss of weight. It would therefore be well to put the patient on a weight reducing diet. As the patient has periods of amenorrhea and headache it would be desirable to have an x-ray of the sella turcica to rule out a pituitary tumor. She apparently has hypogonadism secondary to hypopituitarism and may therefore be given stimulation therapy with pituitary gonadotropin. If this is ineffective she may receive substitutional therapy with estrogenic substance.

VENTILATION OF HOMES

To the Editor:—In planning the construction of an eight room, three story house the heating engineer suggests that an outside air duct to the hot air furnace is not good principle. The heating system plan is a gas furnace with forced hot air; this may be in conjunction with a Precipitron. Is it likely if the house is occupied by four to six people that the air will be freshened sufficiently from the opening of the door, which may happen twenty to thirty times in twenty-four hours? I realize that the circulation of the air through the house will keep it from becoming stuffy, but my query is directed to the healthful aspect and comparative oxygen content.

M.D., Pennsylvania.

Answer.—In ordinary homes the spontaneous leakage of air through cracks and crevices and from the opening of doors is ample to maintain normal oxygen concentration and to keep the air fresh. It is desirable to ventilate kitchens and bathrooms by means or an exhaust fan in order to remove odors, excessive heat and moisture at the source.

Although an outside air duct is not necesssary on this score, it will be desirable to have one installed for cooling the building in the summer by the circulation of cool night air, without the necessity of keeping windows open all night. This "fresh" air pipe should be provided with a damper near the wall inlet and with a quadrant which can be locked shut in cold weather.

BAY RUM

To the Editor:—Can you give me a brief statement as to the harmful effects of drinking bay rum? Ernest Thompson, M.D., Monroe, Ga.

Answer.—Bay rum was originally made in the West Indies by distilling rum with the leaves of their native bay tree, Pimenta racemosa, which is not related to the bay berries of New England but belongs to the same family (Myrtaceae) as cloves and allspice. Bay rum is now prepared by dissolving 0.6 to 1 per cent of bay oil, the pungent aromatic volatile oil distilled from these leaves, the myrcia oil of the National Formulary, with smaller quantities of other aromatic oils, in diluted alcohol of 40 to 60 per cent. The compound spirit of myrcia, N. F. VIII, is typical. It contains myrcia oil 8 cc., orange oil 0.5 cc., pimenta oil 0.5 cc., alcohol 610 cc. and water to make 1,000 cc. Other formulas contain also the oils of clove, bergamot, lemon and rosemary, but the chief potent ingredients are the alcohol and the myrcia oil. This contains 50 to 65 per cent of phenols, including eugenol, and its pungent, irritative action is presumably due to these. The effects of bay rum would therefore correspond to those of its alcohol, perhaps somewhat stronger than "proof," with about 1 per cent of pungent volatile oil somewhat similar to clove oil. A single dose of 25 cc. of such a preparation, containing less than 0.25 cc. of the oil, would produce some gastric irritation but would probably not be harmful; continued use could conceivably cause chronic gastritis. A hundred cubic centimeters, corresponding to 1 cc. of the oil, could probably not be dangerous; 10 cc. of the oil could probably be fatal, but so could the alcohol in the corresponding amount (1,000 cc.) of bay rum. Bay rum hair tonics, however, usually contain varying amounts of cantharides, and this would produce priapism, hematuria and nephritis.

METHODS FOR DETERMINING SERUM PROTEINS

To the Editor:—I have a problem and would greatly appreciate your help. I am beginning to do protein and albumin determinations on blood serum, using a method described on pages 342 to 344 of the Laboratory Methods of the United States Army, edition 4, edited by James Stevens Simmons. This is apparently a modification of the Greenberg method using tyrosine as a standard and developing a blue color in both standard and unknown. The results have been to date too high for the total protein, at least as checked by another method. I have done this with the visual colorimeter but would prefer to plot a curve for use with the Cenco photelometer. However, using number 1 blue, number 2 green and number 3 red filters, I have not had a wide enough difference in the different readings to make really accurate estimations. Quite likely the use of another filter would correct this difficulty, and this is one of the things on which I would like advice. Also I would like to know whether, perhaps, the regular Greenberg procedure would be more satisfactory. If there are any other more recent methods which are not too complicated for a small laboratory and adaptable to the photoelectric colorimeter, I would be glad to be informed about them. Leon A. Alley, M.D., Middleboro, Mass.

Answer.—The method referred to is not included in the fifth edition of "Laboratory Methods of the United States Army," edited by James Stevens Simmons. Nor does it seem that this method using a tyrosine standard is easily adaptable to photoelectric colorimetry. It is suggested that a much better method is that described by G. R. Kingsley, "The Direct Biuret Method for the Determination of Serum Proteins as Applied to Photoelectric and Visual Colorimetry," *J. Lab. & Clin. Med.* **27**:840 (March) 1942. The author used the Klett-Summerson photoelectric colorimeter. The method has been adapted to the Coleman clinical spectrophotometer and can be used doubtless with the Cenco-Sheard-Sanford photelometer. A green filter transmitting light between 500 and 570 millimicrons with maximal transmission at 540 millimicrons is satisfactory. A calibration curve must be made, of course, for the particular instrument, for which some reliable quantitative method should be used for standardization.

DETERMINATION OF FERTILITY IN MEN

To the Editor:—What is the technic of a relatively simple method for the determination of fertility in men by office methods? I have a microscope, counting chamber and slides.

James K. Gray, M.D., Thurmont, Md.

Answer.—For the physician using the equipment listed, the tests most essential are the determination of the number of sperm per cubic centimeter, the percentage of abnormal forms present and the motility of the sperm.

The number of sperm in 1 cubic centimeter is obtained by filling a white blood pipet to the 0.5 mesh with seminal fluid. A solution of 5 per cent sodium bicarbonate and 1 per cent solution of formaldehyde is added as a diluting fluid to the 11 mark on the pipet.

Using a white cell counting chamber, count the number of sperm in 1 square millimeter. Multiplying this number by 10, then by 1,000 and then by 20 will give the number of sperm per cubic centimeter.

To determine the number of abnormal forms, smear the seminal fluid on a slide, slightly heat to fix and stain with gram stain.

The motility can be observed by examining a fresh drop of seminal fluid under the microscope.

Normally 1 cc. of ejaculate should have a minimum of 20 million sperm per cubic centimeter.

The maximum number of abnormal forms should not exceed 24 per cent. Lack of motility does not always indicate sterility.

MENSTRUATION DURING PREGNANCY

To the Editor:—Please explain why women will menstruate regularly while pregnant and deliver full term babies? I have witnessed several cases but was unable to explain the mechanism.

George Vash, M.D., Chester, Mass.

Answer.—In the De Lee-Greenhill Principles and Practice of Obstetrics, page 117, appears the following statement concerning this question: "Menstruation may continue after conception. It is not rare to learn of a woman having one or two periods after she is pregnant, but usually the amount of blood is small and the character of the flow otherwise abnormal. Bleeding after conception is the rule in macacus monkeys, and Hartmann calls it the "placental sign." A true menstrual flow is possible, because the two deciduas do not fuse until the fifth month. Instances in which menstruation persisted during the nine months have been reported. The ovary sometimes continues to function during gestation, as proved by instances of superfetation, of menstrual molimina and autopsies on pregnant women. Rather than a menstruation a bloody discharge is more likely due to abortion, cervical erosions, uterine polyp, fibroids, rupture of a varix at any point in the cervical, vaginal or vulvar canal, extrauterine pregnancy and diseases of the ovum, such as placenta previa."

DOES LIVER EXTRACT OR VITAMIN A DAMAGE THE LIVER?

To the Editor:—Is there any danger of inducing liver damage by repeated injections of liver extract or by the ingestion of large doses of vitamin A over a long period of time? M.D., New York.

Answer.—There is no good evidence that either of these substances damages the liver in therapeutic doses even when given over a long period. There is one possible exception, however, namely the presence of hypersensitivity to liver extract. Under such circumstances it is possible that liver damage may be produced.

CLEANING SURGICAL INSTRUMENTS

To the Editor:—I am wondering what suggestions you may have for the cleaning of surgical instruments. I have been using the patented cleaner "Hemosol" but would welcome a more efficient, practical cleanser. D. E. Rolf, M.D., Cleveland.

Answer.—The most effective way of cleaning instruments seems to be by using a brush with soap and water.

VAGINAL DOUCHING

To the Editor:—In the Feb. 15, 1947 issue of The Journal page 508, there was a note on vaginal douches. A previous query said "for those who insist douches should be used not oftener than once or twice a week at most." This statement I wish to agree with since studying the physiology of the vagina before, during and after douching with certain chemicals in tap water and also after no douching at all. This work has been going on at the Jefferson Davis Hospital department of gynecology for the past thirteen years. Hydrogen ion concentration (pH) of the normal vagina was found to be 4.36; after vinegar douches it was 4.49, or1,130 times less acid than normal, after water douches 6.0, or 5,400 times less acid than normal, after veraseptol douches 5.59, or 4,258 times less acid than normal, after soda douches 6.61, or 4,345 times less acid than normal, after saponated solution of cresol douches 5.62, or 4,130 times less acid than normal, after glucose douches 4.57, or 1,678 times less acid than normal, after sodium chloride douches 7.45, or 4,367 times less acid than normal, after zonite douches 6.72, or 4,351 times less acid than normal, and after alum douches 4.20, or 1,940 times more acid than normal. After no douches and no infection of the vagina, the pH was found to be 4.49, or the same as if the patient had been taking vinegar douches. In infections of the vagina, douches are necessary twice a day in order to wash out the nonphysiologic and irritating vaginal secretion. Without infection, a douche is not necessary except as a cleansing douche after coitus.

Karl John Karnaky, M.D., Houston, Texas.

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PULMONARY EMBOLISM IN MEDICAL PATIENTS

A Comparison of Incidence, Diagnosis and Effect of Treatment in Two Hundred and Seventy-Three Cases at the Massachusetts General Hospital in Two Five Year Periods (1936 to 1940 and 1941 to 1945 Inclusive)

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Pulmonary embolism in medical patients is not infrequent and, contrary to general opinion, is actually commoner than pulmonary embolism occurring postoperatively. It has often been overlooked during the life of the patient even by experienced physicians, and it is still clinically diagnosed in probably less than half of the medical patients in whom it is discovered at autopsy. It was the experience of one of us (P. D. W.) [1] five years ago that pulmonary embolism was diagnosed personally nearly ten times as often in the decade from 1931 to 1940 inclusive as in the previous decade from 1921 to 1930, although the patients suffered from the same kinds and degrees of cardiac disease in the two decades. The answer obviously was twofold: first, the possibility of this condition was borne in mind and second, the criteria for diagnoses became more clearly defined with experience.

Death from pulmonary embolism is still a dreaded complication in hospitalized patients. Only a few years ago preventive measures directed against this fearsome event were practically nil and therapeusis was almost entirely conservative. Occasional heroic attempts at the Trendelenburg operation were met with almost routine failure. The phlebitis which was frequently associated with the embolic episode was treated solely by heat, rest and elevation of the affected part.

In recent years a decided interest in thromboembolic disease has been reflected in the large number of articles appearing in the literature on this subject. Most of this material has emphasized the frequency of pulmonary embolism in surgical patients, that is, after operative intervention, fractures and childbirth. Prophylaxis has been emphasized,[2] and treatment has been suggested along two lines: (a) interruption of the femoral veins [3] and (b) use of the anticoagulants heparin [4] and "dicumarol." [5]

At the Massachusetts General Hospital the chief method of treatment of thromboembolic disease in surgical patients during the last seven years has been bilateral interruption of the femoral veins. Because of the beneficial results obtained by this form of therapy in the surgical cases, it was natural that an increased interest in pulmonary embolism and infarction in medical patients was aroused. This interest was further stimulated in 1940 by the work of Hampton and Castleman.[6] In a study of the postmortem observations in a group of 370 cases of pulmonary embolism 40 per cent were postoperative and the remaining 60 per cent occurred in medical patients, approximately half of whom had cardiac disease. They also found that with the possible exception of those in the cardiac group 95 per cent of the emboli arose from the veins of the legs.

The purpose of this paper is to analyze the cases of pulmonary embolism occurring in medical patients at the Massachusetts General Hospital from 1936 to 1945, a ten year period, and to compare the results of conservative treatment in the five year period from 1936 to 1940 with those obtained in a second five year period (1941 to 1945) during which interruptions of the femoral veins were carried out.

Femoral vein interruption in these medical patients has, as a rule, been preferred by us to anticoagulant therapy because of its immediate control of the danger and because of its greater practicability in clearing the threat of recurrent or chronic leg vein thrombosis once and for all, especially in cardiac cases of complete or partial invalidism with myocardial failure and resulting peripheral circulatory stasis

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French Government Research Fellow in Medicine, Dr Carlotti

From the Medical and Surgical departments, Massachusetts General Hospital

Read before the annual meeting of the American Heart Association, San Francisco, June 28, 1946 and at the second Inter American Cardiological Congress, Mexico City, Mexico, Oct 10, 1946

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INCIDENCE OF EMBOLISM AND INFARCTION

The incidence of pulmonary embolism and infarction in medical and surgical patients for the years 1936 to 1945 was determined (table 1). During that period there were 45,523 admissions to the medical services and 98,642 admissions to the surgical services. Since there were 273 cases of pulmonary embolism on the medical services and 238 cases on the surgical services, the mean incidence of pulmonary embolism or infarction during the years 1936 to 1945 was 0.6 per hundred patients on the medical services and 0.24 per hundred patients on the surgical services. In this ten year period 53.4 per cent of all cases of pulmonary embolism occurred in medical patients. This figure corresponds roughly with that given by Hampton and Castleman.[6]

TABLE 1.—*Incidence of Pulmonary Infarction or Embolism in Medical and Surgical Patients*

	Total Cases		Cases of Infarct or Embolism		Percentage	
Year	Medical	Surgical	Medical	Surgical	Medical	Surgical
1936	4,558	9,609	7	12	0.15	0.12
1937	4,578	9,606	27	24	0.56	0.24
1938	4,587	9,342	34	32	0.74	0.34
1939	4,907	9,005	31	22	0.63	0.24
1940	4,990	9,886	23	19	0.46	0.19
1941	4,969	10,610	35	28	0.70	0.26
1942	4,828	10,626	36	28	0.74	0.26
1943	4,399	10,667	12	19	0.27	0.17
1944	3,869	9,945	46	29	1.18	0.29
1945	3,838	9,346	22	25	0.57	0.27
Total	45,523	98,642	273	238		
Average yearly incidence					0.60	0.24

TABLE 2.—*Pulmonary Embolism in Medical Patients*

	Group A 1936-1940		Group B 1941-1945		Total Number of Cases 1936-1945
	No.	%	No.	%	
Number of cases	122		151		273
Definite (autopsies)	34	27.8	56	37.0	
Definite (clinically)	74	60.7	74	49.0	
Probable	14	11.5	21	14.0	
Deaths	52	42.6	73	48.0	
Autopsies	34	65.3	56	76.7	

CLASSIFICATION, DEATHS AND AUTOPSIES

The 273 cases of pulmonary embolism or infarction observed in medical patients during the ten year period have been divided into two groups: *A*, 122 cases occurring during 1936 to 1940, inclusive, and *B*, 151 cases for 1941 to 1945, inclusive. In table 2 these groups have been subdivided into three classes. The definite (autopsy) cases were those proved by postmortem examination. The definite (clinical) cases were those in which the clinical diagnosis was strongly supported by the physical observations, including thoracic pain and bloody sputum, the roentgenogram of the chest and the electrocardiogram. The probable cases were those in which the diagnosis of embolism or infarction was definite but was not always supported by all criteria. The percentage of cases in each classification was roughly the same for both five year periods.

In group *A* there were 52 deaths, a mortality rate of 42.6 per cent, and there were 34 autopsies, an autopsy percentage of 65.3. In group *B* there were 73 deaths, a mortality rate of 48 per cent, and there were 56 autopsies, an autopsy percentage of 76.7.

SEX AND AGE

An analysis of groups *A* and *B* (table 3) reveals that in both groups there was a slight predominance of male patients. In group *A* there were 69 males (56.5 per cent) and in group *B* there were 91 males (60.3 per cent). The striking influence of age on the incidence of pulmonary embolism is also shown in table 3. In group *A* 83.8 per cent of the cases and in group *B* 87.4 per cent occurred in patients over 40 years of age. These figures agree with a similar analysis in surgical patients published in 1943 by Allen, Linton and Donaldson.[2b]

RELATIONSHIP OF HEART DISEASE TO PULMONARY EMBOLISM

The impression has long existed that the rate of blood flow is an important factor in regulating the formation of thrombus. This has been pointed out by Murray and MacKenzie[4b] and de Takats,[3c] among others. In a similar manner cardiac disease has long been linked with venous thrombosis and pulmonary embolism. As previously stated, Hampton and Castleman [6] found that 60 per cent of their cases of pulmonary embolism were in medical patients, half of whom had cardiac disease.

In our study we found an even higher incidence of cardiac disease (table 4), which afflicted 59 per cent of the patients in group *A* and 70.8 per cent of those

TABLE 3.—*Sex and Age*

		Group A 1936-1940 122 Cases			Group B 1941-1945 151 Cases		
		No.	%		No.	%	
Sex	Male	69	56.5		91	60.3	
	Female	53	43.5		60	39.7	
Age	0 - 10	0	0.0		0	0.0	
	10 - 20	1	0.8		3	2.0	
	20 - 30	9	7.4		3	2.0	
	30 - 40	10	8.0		13	8.6	
	40 - 50	24	19.7		22	14.6	
	50 - 60	34	27.9		42	27.8	
	60 - 70	28	23.0	83.8	44	29.1	87.4
	70 - 80	15	12.4		22	14.6	
	80+	1	0.8		2	1.3	
	Total	122	100.0		151	100.0	

TABLE 4.—*Relationship of Cardiac Disease*

	Group A 1936-1940 122 Cases		Group B 1941-1945 151 Cases	
	No.	%	No.	%
Cardiac	72	59.0	107	70.8
Noncardiac	50		44	
Previous disease				
Hypertensive heart disease	26		33	
Rheumatic heart disease	30		31	
Coronary heart disease	16		25	
Phlebitis	12		11	
Clinical diagnosis on admission				
Congestive failure	52		52	
Pulmonary infarct or embolism	23		52	
Pneumonia	13		17	

in group *B*. There was a frequent history of hypertensive, rheumatic or coronary disease of the heart.

In at least one third of the patients in each group the clinical diagnosis on admission was congestive heart failure. This observation coincides with the old belief that venous stagnation plays an important role in thromboembolic disease

TABLE 5—*Analysis of Symptoms*

	Group A 1936-1940 122 Cases		Group B 1941-1945 151 Cases	
	No	%	No	%
Symptoms				
Pain in the chest	60	49.1	86	56.9
Dyspnea	39	31.9	54	35.7
Hemoptysis	14	11.4	28	18.5
Admitted with symptoms of infarct	60		90	
Infarct after admission to hospital	62		61	

TABLE 6—*Clinical Chart*

	Group A 1936-1940 122 Cases	Group B 1941-1945 151 Cases
Temperature		
100 F or over on admission	37	40
Sharp rise in hospital (98 to 102 F)	47	42
Pulse rate		
100 or over on admission	42	36
Sharp rise in hospital (90 to 110)	60	42
Respiratory rate		
30 or over on admission	27	21
Sharp rise in hospital (20 to 30)	48	33

An admission diagnosis of pulmonary infarct or embolus (table 4) was made relatively more frequently in group *B* than in group *A* This was probably due to the increased interest in pulmonary embolism and infarction during the period 1941 to 1945

ANALYSIS OF SYMPTOMS

Table 5 points out briefly the commoner symptoms of infarction or embolism found in both groups Pain in the chest was the symptom most frequently observed (49.1 per cent and 56.9 per cent) and was associated at times with either dyspnea (31.9 per cent and 35.7 per cent) or hemoptysis (11.4 per cent and 18.5 per cent) Those symptoms have been shown to predominate by other writers, among them Krause and Chester,[7] who found hemoptysis in 47, or 65 per cent, and thoracic pain in 23, or 32 per cent, of a group of 73 patients with pulmonary infarction

The symptoms of infarction either were present at admission or developed during a definite episode while the patients were in the hospital

CLINICAL CHART

Allen[3d] has pointed out the frequency with which a simultaneous rise of temperature, pulse rate and respiratory rate may be the first indication of pulmonary embolism Table 6 reveals that in both groups in our study this phenomenon was frequently observed At times this change occurred hours before any other subjective symptom or sign of embolism appeared In recent years at the Massachusetts General Hospital an unexplained concomitant elevation of temperature, pulse rate and respiratory rate calls for a meticulous search in an effort to rule in or rule out thromboembolic disease as a causative factor.

PHYSICAL EXAMINATION

The usual pulmonary observations on physical examination of patients in both groups of pulmonary embolism or infarction were rales, dulness and diminished breath sounds (table 7). In less than 10 per cent of either group was a friction rub found during physical examination. Signs of fluid were reported in a relatively small per cent of each group.

ROENTGENOGRAPHIC DATA

The most interesting observation in an analysis of the roentgenographic interpretations for the ten year period 1936 to 1945 was the increased frequency with which a definite diagnosis of infarction was made during the second five year period In group *A*, as shown in table 8, a diagnosis of infarction was made only 36 times (33.3 per cent). In group *B* a diagnosis of infarction was made on 73 occasions, or in 60 per cent of the cases, and at the same time the indefinite interpretation, consolidation, was made much less frequently in group *B* The increased ability of the members of the department to make a definite diagnosis of infarction coincided with the increase in general interest in thromboembolic disease Fleischner, Hampton and Castleman[8] in 1941 published an article which did much to establish the roentgenographic diagnosis of pulmonary infarction In those cases (table 8) in which infarction or consolidation were not reported, the usual observations were fluid or atelectasis There was a small percentage of patients in each group in whom normal lung fields were reported.

TABLE 7—*Observations on Physical Examination*

	Group A 1936-1940 122 Cases		Group B 1941-1945 151 Cases	
	No	%	No	%
Rales	60	49.1	95	62.9
Dulness	68	55.7	40	26.4
Diminished breath sounds	28	22.9	23	15.2
Friction rub	12	9.8	13	8.6
Fluid	22	18.0	19	12.5

TABLE 8—*Roentgenographic Observations*

	Group A 1936-1940 108 Cases		Group B 1941-1945 122 Cases	
	No	%	No	%
Infarct	36	33.3	73	60.0
Consolidation	52	48.2	23	18.9
Fluid	10	9.3	12	9.8
Atelectasis	6	5.5	6	4.9
Clear	4	3.7	8	6.5

ELECTROCARDIOGRAPHIC INTERPRETATION

Murnaghan, McGinn and White[9] have described the changes in the electrocardiographic pattern found in the presence of pulmonary infarction and embolism. They have pointed out the obscuring influence of preexisting cardiac disease and the necessity for early study in cases in which right ventricular strain is only temporary. In table 9 are listed the electrocardiographic interpretations in both groups. The most frequent aberrations from normal were due to coexisting disease of the heart. However, in 23.6 per cent of those examined in group *A* and in 11.8 per cent of those examined in group *B* there were changes which fell into the pattern designated as cor pulmonale complex. This complex consists in (1) the appearance of an S wave in lead 1, or its exaggeration if already present; (2) the appearance of a Q wave in lead 3, or its exaggeration if already present; (3) the inversion of the T waves in lead 3, or deepening of inverted T waves if already present; (4) the inversion of the T waves in the precordial leads overlying the right ventricle, CF_2 to CF_4, and (5) the lowering to inversion of the T waves in lead 2. In addition right bundle branch block had infrequently been associated with the complex.

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[7] Krause, G R, and Chester, E M Infarction of the Lungs A Clinical and Roentgenological Study, Arch Int Med **67:** 1144 1156 (June) 1941

[8] Fleischner, F, Hampton, A O, and Castleman, B Linear Shadows in the Lungs, Am J Roentgenol **46:** 610 618 (Nov) 1941.

[9] Murnaghan, D, McGinn, S, and White, P D. Pulmonary Embolism With and Without Acute Cor Pulmonale, with Especial Reference to the Electrocardiogram, Am Heart J **25:** 573 597 (May) 1943

TABLE 9.—*Electrocardiographic Interpretation*

	Group A 1936-1940 72 Cases		Group B 1941-1945 118 Cases	
	No.	%	No.	%
Auricular fibrillation	24	33.3	30	25.4
Coronary heart disease	10	13.8	26	22.0
	6	8.3	15	12.7
	18	25.0	17	14.4
	17	23.6	14	11.8
	3	4.1	6	5.0
Normal	12	16.6	12	10.0

AUTOPSY OBSERVATIONS

There were 34 autopsies in group *A* and 56 autopsies in group *B* (table 10). The pathologic observations of interest in our study of pulmonary embolism and infarction were chiefly related to the lungs, the heart and the veins of the legs. Pulmonary embolus and/or infarct was found in all cases. In group *A*, 17 of 34 autopsies (50 per cent) showed massive pulmonary emboli; in group *B* there were 10, or 17.8 per cent, among 56 autopsies. We believe that this definite reduction in the frequency of massive embolus is related to the attempt in recent years to be on the lookout for warning signs or symptoms of infarction or phlebitis so that measures to prevent fatal embolism may be taken. Welch and Faxon[10] have pointed out that 1 of 4 patients in whom there develop nonlethal pulmonary embolisms is apt to die of massive pulmonary embolism.

Associated cardiac disease was a common observation in the postmortem examination in both group *A* and group *B* (table 10). Rheumatic heart disease was found in 23.5 to 30.3 per cent of the cases. Myocardial infarction, recent or old or both, was found in 20.5 to 42.8 per cent of the cases. Mural thrombus formation likewise was frequently observed.

An interesting observation was that bilateral or right-sided mural thrombosis was found only in 11.4 per cent of the patients in group *A* and in 14.2 per cent of those in group *B*. In most of the standard textbooks and systems of medicine the right side of the heart is indicated as the origin of pulmonary embolism in medical patients, especially those with cardiac disease. More recently, the veins of the legs have been pointed out to be the source of pulmonary emboli. Hampton and Castleman[6] reported that with the possible exception of the cardiac group 95 per cent of the pulmonary emboli seemed to arise from the veins of the legs. Barker and associates[11] in a study of 1,665 consecutive cases of postoperative venous thrombosis and pulmonary embolism found thrombosis in the lower extremities in 85 per cent of their cases.

In our study of the postmortem examinations of medical patients we found scattered instances (table 10) of isolated thrombosis of the vena cava, the iliac veins and the pelvic veins, but in group *A* 78.9 per cent and in group *B* 75 per cent of those in whom the veins of the legs were examined showed thrombosis. These figures are in decided contrast to the observations for thrombi originating in the right side of the heart and would appear strongly to designate the veins of the legs as the usual origin of pulmonary embolism and infarction. Unfortunately, examination of the peripheral veins is not always accomplished in postmortem examinations. This important omission is usually due either to autopsy restrictions or to haste on the part of the examiner.

It is interesting to note that, in the 30 cases in group *B* in which thrombosis of the veins of the legs was found, 9 were patients who had undergone interruption of the femoral vein. In these 9 postoperative cases clot was found proximal to the ligature in 5 instances, but none of these patients had had massive clinical pulmonary episodes following venous interruption.

INTERRUPTION OF THE FEMORAL VEIN

From 1941 onward at the Massachusetts General Hospital interruption of the femoral vein was undertaken in cases in which a diagnosis of pulmonary embolism or infarction had been made in medical patients. Homans had demonstrated the efficacy of this procedure some time previously.[3a] Interruption of the femoral veins had already been instituted on the

TABLE 10.—*Autopsy Observations in Ninety Cases of Pulmonary Embolism in Medical Patients*

	Group A 1936-1940 34 Autopsies		Group B 1941-1945 56 Autopsies	
	No.	%	No.	%
Lungs				
Pulmonary embolus	18		37	
Massive	17		10	
Pulmonary infarct	32		48	
Peripheral venous thrombosis				
Not examined	15		16	
No clot found	0		8	
Vena cava alone	1		1	
Veins of pelvis alone	2		0	
Iliac veins alone	1		1	
Femoral and/or popliteal veins	15 (78.9% of those examined)		30 (75.0% of those examined)	
Heart				
	8	23.5	17	30.3
	7	20.5	24	42.8
	3		7	
Recent	0		8	
Old	4		9	
Mural thrombi	14	41.1	30	53.5
Left (either chamber)	10	29.4	22	39.2
Right (either chamber)	3	11.7	2	14.3
Bilateral	1		6	

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10. Welch, C. E., and Faxon, H. H.: Thrombophlebitis and Pulmonary Embolism, J. A. M. A. **117**: 1502-1508 (Nov. 1) 1941.

11. Barker, N. W.; Nygaard, K. K.; Walters, W., and Priestley, J. T.: A Statistical Study of Post-Operative Venous Thrombosis and Pulmonary Embolism: IV. Location of Thrombosis; Relation of Thrombosis and Embolism, Proc. Staff Meet., Mayo Clin. **16**: 33-37 (Jan. 15) 1941.

surgical services, and the results of the procedure since then have been reported by Allen and his co-workers.[3b, d]

Table 11 reveals that in the 151 cases of group *B* (1941 to 1945) there were 60 operations to interrupt femoral veins. At first a unilateral interruption was performed as a rule. In 1941 and 1942 when interruptions of the femoral vein were relatively new and the procedure had not been standardized, it was considered that a unilateral operation on the apparently involved side was the procedure of choice. It soon became evident, however, that a bilateral operation gave the patient much more protection; several cases were reported in which large emboli arose postoperatively from the supposedly uninvolved side. Since 1943 bilateral operations have been done routinely (table 11), even though the signs of venous thrombosis are present in only one extremity.

Table 11.—*Interruptions of Femoral Veins*

	Unilateral			Bilateral			
Year	Common	Superficial	Vein Not Designated	Common	Superficial	Vein Not Designated	Total
1941	3	1	1	..	..	1	6
1942	1	3	..	4	2	3	13
1943	..	..	..	2	4	1	7
1944	..	..	..	4	10	1	21
1945	..	..	..	..	7	3	10
Total	4	4	1	10	22	9	60

Table 12.—*Location of Thrombus*

Year	No. of Patients	Common Femoral Vein	Superficial Femoral Vein
1941	6	2	3
1942	13	3	1
1943	7	3	0
1944	21	3	0
1945	10	1	0
Total	60	12	4

In 60 patients, 14 had the common femoral vein interrupted distal to the saphenofemoral junction and 36, the superficial femoral veins distal to the profunda femoris vein. In 10 cases the procedures were not clearly designated in the operative note but were in all probability performed on superficial femoral veins. We consider that in this group of patients, chronically ill with cardiac disease for the most part, interruption of the common femoral vein is indicated in order to eliminate the profunda femoris vein as a source of secondary emboli.

Thrombus was found at the time of operation in the common femoral vein on 12 occasions and in the superficial femoral vein 4 times (table 12). In the last two years of the study, 1944 and 1945, thrombus was found at operation in only 4 of 34 cases as compared to this observation in 5 of 6 cases in 1941. This indicates that the operative procedures are now being undertaken sooner and that the thrombi, which originate usually in the calf, have not had time to propagate as far as the level of the femoral veins.

There were a few cases of persistent swelling, sepsis and lymphatic fistula reported as complications in this group of 60 operations. The complication of greatest interest, however, is probably that of postoperative pulmonary infarction (table 13).

There were 13 of the 60 patients who had postoperative episodes which strongly suggested pulmonary infarction. On analysis of these 13 cases it was found that none of the secondary episodes was massive or fatal. It was also found that only 2 of the secondary infarctions occurred in patients whose common femoral veins had been interrupted. Eleven of the 13 episodes followed interruption of the superficial femoral veins. This would seem to bear out the belief that in this particular group of chronically ill patients interruption of the common femoral vein should be the procedure of choice.

There were 17 deaths in the 60 patients with operative intervention. In the 91 patients of group *B* who were not operated on plus the 122 patients of group *A*, a total of 213 cases, there were 108 deaths. The mortality rate (table 14) for this operated group is therefore 28.3 per cent and that for nonoperated cases 50.7 per cent. Since the patients who had interruptions of the femoral veins were not selected because of their good risk qualities, we consider that this method of treatment has been of definite significance in reducing the death rate from pulmonary embolism in medical patients.

The mortality in these medical patients, the considerable majority of whom had serious heart disease, has of course been far greater than that in surgical (postoperative) patients undergoing the same operative interruption of the femoral veins for pulmonary embolism. The reason lies, of course, in the precarious cardiac status of the medical patients, who may die of heart failure despite their temporary rescue from fatality due to the complicating pulmonary embolism.

Table 13.—*Complications After Interruption of Femoral Veins*

Year	No. of Patients	Swelling	Sepsis	Lymphatic Fistula	Pulmonary Infarct
1941	6	2	..	..	2
1942	13	..	..	1	3
1943	7	..	..	1	1
1944	21	3	3	..	5
1945	10	..	2	..	2
Total	60	5	5	2	13*
Incidence		8.3%	8.3%	3.3%	21.6%

* Eleven, or 85%, of these patients had interruption of the superficial femoral veins only.

Table 14.—*Influence of Interruption of Femoral Veins on Mortality Rate in 273 Medical Patients with Pulmonary Embolism*

	Operated Group	Nonoperated Group
Number of patients	60	213
Number of deaths	17	108
Mortality	28.3%	50.7%

SUMMARY AND CONCLUSIONS

1. An analysis has been made of the incidence, symptoms and signs and treatment of pulmonary embolism in medical patients at the Massachusetts General Hospital during two five year periods, from 1936 to 1940 inclusive (group *A*) and from 1941 through 1945 (group B).

2. During the entire ten years the ratio of patients with pulmonary embolism on the medical wards (0.6

per cent) was more than twice that on the surgical wards (0.24 per cent). Although there were actually more than twice as many surgical cases (98,642) as medical (45,523), more than half (53.4 per cent) of all the patients with pulmonary embolism were medical (273 as compared to 238 surgical).

3. Of the 273 medical cases of pulmonary embolism 122 were diagnosed during the first five years and 151 during the second, the larger incidence being due in part at least to improvement in diagnostic ability.

4. Male patients predominated, making up 56.5 per cent of the first group and 60.3 per cent of the second.

5. The great majority of the patients were over 40 years of age (83.8 per cent), and over half were from 50 to 70 years of age.

6. The majority of the patients had cardiac disease (59 per cent in group *A* and 70.8 per cent in group *B*). All types of cardiac disease were represented, especially the rheumatic, hypertensive and coronary forms. Congestive failure was frequent as a background, and auricular fibrillation was present in nearly one third of the patients.

7. Of symptoms, pain in the chest (chiefly pleural) was the commonest but not the earliest, being found in about half the cases (49.1 and 56.9 per cent in groups *A* and *B*, respectively). Dyspnea was present in one third (31.9 and 35.7 per cent), but hemoptysis occurred only in a relatively small group (10.4 and 18.5 per cent). Tachycardia out of proportion to the degree of fever or dyspnea was a prominent sign. Physical abnormalities in the chest were often absent; a pleural friction rub was found in less than 10 per cent of the cases (9.8 and 8.6 per cent).

8. The roentgenologic diagnosis of pulmonary infarction improved considerably in the second five year period as compared with that in the first (57:33 per cent).

9. The electrocardiographic pattern of the acute cor pulmonale was evident in about one fifth of the patients who were so examined.

10. Autopsies in 90 (72 per cent) of the 125 patients who died showed massive embolism in 50 per cent, but only in a few cases (12) were mural thrombi found in either chamber of the right side of the heart. In over 75 per cent of the cases in which the veins of the legs were examined thrombosis therein was disclosed.

11. In only 1 case encountered during the first five year period were the femoral veins interrupted; but in the second period the operation was done bilaterally on either the superficial or common femoral veins (the latter are the preferable sites) in 60 patients, with a reduction of early mortality (within one month) to 28.3 per cent as compared with 50.7 per cent in those without operative treatment, the remaining deaths being in large part the result of congestive heart failure and not of recurrent pulmonary embolism.

12. The possibility of pulmonary embolism in medical patients, especially in cardiac cases, should be constantly borne in mind and when discovered, should be treated by bilateral interruption of the common femoral veins to prevent recurrent embolism which could prove fatal. This interruption must always be distal to the sapheno-femoral junction because if it is done proximal to it persistent lymphedema of the entire extremity will develop; we have also pointed out that this interruption should be proximal to the profunda femoris.

THROMBOSIS OF THE CAVERNOUS SINUS

Newer Concepts in Its Management and Report of Three Cases

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Though thrombosis of the cavernous sinus is not common, it is not sufficiently rare to warrant reporting isolated cases unless they possess some unusual aspects. In this article we have endeavored to survey the existing literature, both before and since the advent of chemotherapy and the anticoagulants, and to report 3 cases with unusual aspects.

The term "cavernous sinus thrombosis" is used in a generic sense and includes cases of phlebitis, thrombophlebitis and phlebothrombosis as well as true aseptic thrombosis. By far the majority of cases reported are of septic origin and would therefore be classified as phlebitic or thrombophlebitic. Aseptic thrombosis and phlebothrombosis are usually secondary to trauma, a failing circulation or to other noninfectious inflammation of the cavernous sinus.

Although thrombosis of the cavernous sinus is usually unilateral in its clinical manifestations, there is almost always bilateral involvement histopathologically because of the anatomic communications between the two cavernous sinuses by way of the anterior and posterior basilar sinuses, situated on the floor of the sella turcica under the pituitary body.

HISTORICAL DATA

The first case of thrombosis of the cavernous sinus observed at autopsy was described by Duncan[1] in 1821. The first clinical report was made by Vigla[2] in 1839. In 1902 Dwight and Germain[3] surveyed the literature and collected 178 cases, to which they added 4 of their own, and in 1918 Smith[4] estimated that 300 cases had been reported since the disease was first recognized. In 1936 Grove[5] published an extensive survey of the literature up to that time and noted that the total number of reported cases was "not much in excess of 400." Obviously there had been more cases, but many were undiagnosed and not all diagnosed cases were reported. It is not always possible to establish the diagnosis clinically, and, as pointed out by Eagleton,[6] the cavernous sinus is not always examined at autopsy in obscure cases of septicemia. The cases cited and reported by Grove[5] occurred before the availability of chemotherapeutic drugs and showed an extremely grave prognosis. To quote from Grove,[5] "The percentage of recovery from all types of thrombosis of the cavernous sinus is probably not greater than 7 per cent. The percentage of recovery from the purely aseptic types is considerably higher than this." Since 1936 many

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1. Cited by Chisolm, J. J., and Watkins, S. S.; Twelve Cases of Thrombosis of Cavernous Sinus, Arch. Surg. **1**: 483-512 (Nov.) 1920.

2. Cited by Dixon, O. J.: The Pathologic Examination in Cavernous Sinus Thrombosis, J. A. M. A. **87**: 1088-1092 (Oct. 2) 1926.

3. Dwight, E. W., and Germain, H. H.: Thrombosis of Cavernous Sinus with Report of Four Cases, Boston M. & S. J. **146**: 456-461, 1902.

4. Smith, D.: Cavernous Sinus Thrombosis, Arch. Ophth. **47**: 482-496 (Sept.) 1918.

5. Grove, W. E.: Septic and Aseptic Types of Thrombosis of Cavernous Sinus, Arch. Otolaryng. **24**: 29-50 (July) 1936.

6. Eagleton, W.: Cavernous Sinus Thrombophlebitis, New York, The Macmillan Company, 1926.

cases have been reported in which the sulfonamide compounds and penicillin have been employed, and the recovery rate has been much higher. No attempt will be made to present a complete bibliographic review of the cases reported thereafter, because little would be gained by such a review. The primary advances in the cases reported since 1936 are the use of sulfonamide drugs, penicillin and anticoagulants, the general abandonment of surgery of the cavernous sinus and the much higher rate of recovery.

ETIOLOGY

There are two primary types of thrombosis of the cavernous sinus: aseptic thrombosis and septic thrombosis. The aseptic type may result from trauma to the head (as in fractured skull); from direct trauma to the sinus from puncture wounds, either by violence or operative accident, or from a failing circulation in debilitated patients at the extremes of life (marasmic thrombosis). In the last group the thrombosis is always sterile and seldom primary, whereas in the traumatic group the thrombosis is usually sterile but the sinus may be directly infected at the time of injury. Traumatic thrombosis may occur as late as one month after injury.

The septic type of thrombosis is by far the commonest, is of infectious origin and is secondary to a focus elsewhere. As expressed by Lederer,[7] there are four recognized routes of infection:

1. Anterior foci: Such infections result from suppurations of the upper lip, ala nasi, vestibule of the nose and eyelids and spread by way of the angular, supraorbital and supratrochlear veins to the ophthalmic veins. This is the commonest route of infection.

2. Internal foci: These infections occur as a result of intranasal operations on the septum, turbinates and sinuses; after the use of the actual cautery in the nose during the stage of acute infections, and from suppuration of the posterior ethmoid and sphenoid sinuses, rarely the antrums. The infection is spread directly through the ethmoidal veins or through the wall of the sphenoid sinus.

3. Inferior foci: Such infections develop from peritonsillar abscess, operations on the tonsil, operations on osteomyelitis of the superior maxilla, maxillary dental extractions and deep cervical abscess. They spread by way of the pterygoid plexus or by direct proximal (retrograde) extension of the internal jugular vein through the lateral sinus and the petrosal sinuses.

4. Posterior foci: These infections occur as a result of extensive involvement of the middle ear and mastoid with lateral sinus phlebitis or thrombosis and spread in a retrograde manner through the petrosal sinuses to the cavernous sinus.

DIAGNOSIS

The onset of thrombosis of the cavernous sinus is usually manifested by a severe chill, a high temperature ranging from 102 to 105 F., extreme toxicity and perhaps nausea and vomiting. There is headache, but the patient is mentally alert until meningeal involvement occurs. The first localizing sign is definite edema of the bulbar conjunctiva and chemosis of the eyelids, with rapidly progressive exophthalmos of the eye on the affected side, usually becoming bilateral unless the disease is arrested or the patient dies. There is also limitation of the movement of the eye (abducens or sixth nerve paralysis), with concomitant alterations in sizes of the two pupils. Meningitis usually occurs rather early, after which the sensorium is decidedly affected. Fundal examination reveals dilatation of the retinal veins but seldom papilledema. There may be some swelling in the region of the mastoid on the affected side, owing to the exit in this region of an emissary vein in connection with the sinuses that communicate with the cavernous sinuses. Blood culture is usually positive if no chemotherapy has been administered.

The clinical diagnosis of this disease is usually not difficult. However, the absolute correctness of the diagnosis can only be established in those cases examined at autopsy. The acute onset, toxicity, sustained high fever and the characteristic ocular observations are classic signs of the disease.

Eagleton[6] presented certain criteria for establishing the diagnosis: (*a*) a known site of infection; (*b*) an infection of the blood stream; (*c*) early signs of venous obstruction; (*d*) involvement of the nerves in the sinus; (*e*) a neighborhood abscess of the soft parts, and (*f*) symptoms of complicating disease.

The two commonest conditions which must be differentiated from thrombosis of the cavernous sinus are orbital cellulitis and lateral sinus thrombosis. In the latter disease the onset is gradual and almost always follows an infection of the middle ear or of the mastoid or an infection in the neck. Fever is intermittent, and the temperature chart is typical, with extreme elevations associated with chills followed by remissions to normal. The blood culture is usually positive in thrombosis of either blood sinus (provided no chemotherapy has been administered), and involvement of the cavernous sinus may be a complication of lateral sinus thrombosis.

Orbital cellulitis remains unilateral and is unassociated with the extreme toxemia observed in thrombosis of the cavernous sinus. Retrobulbar aspiration usually proves positive in orbital cellulitis, and there is usually no alteration in the size of the pupils. There may be limitation of motion of the eyeball due to pressure, but a true paralysis of the cranial nerve does not occur.

Other conditions which must be considered in differential diagnosis are cellulitis of the cheek and face when accompanied by edema of the eyelids, infection of the ethmoids and frontal sinuses, tumors of the orbit and its contents and exophthalmos resulting from arteriovenous aneurysm.

THERAPY

Prior to the introduction of the sulfonamide drugs as therapeutic agents, the treatment of thrombosis of the cavernous sinus was most unsatisfactory and the prognosis was extremely grave whether medical management or surgical intervention was employed.

Although numerous operations were devised for the treatment of this disease, Eagleton[6] in 1926 succinctly stated the indications for surgical intervention as: (*a*) eradication of the original focus; (*b*) the establishment of as free drainage as possible through the original path of the infection, and (*c*) placing of the inflamed and thrombosed cavernous sinus at rest by ligation of the common or the internal carotid artery. He recognized that radical surgical procedures directed to the cavernous sinus itself had proved unavailing.

After the introduction of sulfanilamide in 1936, and the other sulfonamide compounds later, reports began to appear in the literature of cases in which a much higher incidence of recoveries occurred. Perhaps the earliest case of cavernous sinus thrombosis in the English literature in which sulfanilamide was employed was reported by MacNeal and Cavallo.[8] These authors reported a single case in which a patient with bacteremia and cavernous sinus thrombosis was given sulfanilamide in small doses for only two days, after which she became nauseated and refused the drug. She was then treated with blood transfusions, streptococcic serum and bacteriophage. Though the recovery cannot be attributed to the sulfanilamide, this case is cited to properly accredit the authors. Since this time many reports have appeared in which the sulfonamide drugs were used. In 1941 Lyons[9] reported 2 cases in which sulfonamide compounds were used in combination with the anticoagulant, heparin, with recovery in both instances. Schall,[10] continuing this work, reported 1 case in which sulfathiazole and heparin were employed, with recovery of the patient. In 1943 Lyons[11] reported the successful use of penicillin in combination with sulfathiazole in a case of cavernous sinus thrombosis. Welty[12] subsequently reported a case of thrombosis of the cavernous sinus in a white boy aged 13 in which sulfadiazine, penicillin and heparin were employed, with recovery. Wolfe and Gain[13] mentioned the possibility of using heparin and "dicumarol" in the treatment of the disease but did not employ either drug in the case reported by them. A careful review of the literature by us fails to reveal any report of a case in which "dicumarol" was employed, with or without other agents, so that the use of this drug in 1 of our cases may well represent its earliest use in treatment of this condition.

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[7] Lederer, F. L.: Disease of the Ear, Nose and Throat, Philadelphia, F. A. Davis Company, 1945.

In view of our present knowledge of thrombophlebitis in general, it is our considered opinion that anticoagulant therapy is of great value in thrombosis of the cavernous sinus and that both heparin and "dicumarol" should be employed in every case. The intravenous administration of heparin produces an almost immediate but fleeting prolongation of the prothrombin time, whereas the oral administration of "dicumarol" produces a delayed but more sustained prolongation of the prothrombin time. The advantage of the quick action of heparin is offset by its costliness and the difficulty of its administration; in contradistinction, "dicumarol" is relatively inexpensive and is given orally. The practical application of these facts leads us to believe that in every case of cavernous sinus thrombosis both heparin and "dicumarol" should be given at once, with heparin being discontinued in twenty-four to forty-eight hours as the "dicumarol" becomes effective and the prothrombin time reaches the desired level. (Compare this with the combined use of regular insulin and protamine zinc insulin in the treatment of diabetes.)

REPORT OF CASES

Case 1.[14]—M. J. H., a white girl aged 8 was readmitted to the hospital on Aug. 4, 1944 because of headache of three days' duration, high temperature and extreme toxicity.

The past history was entirely negative, except for a bilateral chronic otitis media. The patient had recently been advised to have a tonsillectomy and adenoidectomy. On July 21, 1944 these surgical procedures had been carried out with the patient under gas and ether anesthesia. The postoperative course was normal. The child was seen in the outpatient clinic on July 28 and discharged. On August 4 she was brought back to the outpatient clinic in obvious toxemia, with a temperature of 104 F. There was inequality of the pupils, the right one being larger than the left, but both reacted to light. There was some sour-smelling discharge in each ear canal, but no tenderness or edema over either mastoid. The remainder of the physical examination was negative.

Urinalysis was normal except for a trace of albumin. The red blood cell count was 3,170,000; there were 13,550 white blood cells, with polymorphonuclears 92 per cent, lymphocytes 5 per cent and monocytes 3 per cent; the hemoglobin was 66 per cent. The sedimentation rate was 18 mm. (Wintrobe, corrected). The blood sugar level was 188 mg. per hundred cubic centimeters after 1,000 cc. of 5 per cent dextrose solution had been administered intravenously. The nonprotein nitrogen level was 50 mg. per hundred cubic centimeters.

Examination of the spinal fluid revealed a pressure of 130 mm. of water, no cells and 13 mg. of protein per hundred cubic centimeters. A roentgenogram of the chest showed the heart and lungs to be normal. On roentgen examination of the mastoids an undeveloped cell structure was found on either side, with no evidence of destruction of the bone.

About six hours after admission there developed a definite exophthalmos with lateral rectus paralysis on the right side, and the patient became deeply stuporous. A fundal examination revealed essentially normal conditions. In spite of the administration of 1 Gm. of sodium sulfadiazine intravenously every four hours after admission and 50,000 units of penicillin at the first signs of exophthalmos, with 10,000 units every four hours thereafter, the child died at 12:40 a. m. on Aug. 6, 1944. The exophthalmos remained unilateral throughout.

Postmortem examination was refused.

Case 2.—J. F. P., a white man aged 45, was admitted to the hospital on Jan. 9, 1945 at 11:45 p. m. on Dr. Louis Dobihal's service. History revealed a fever of ten days' duration and a swollen right eye of one day's duration. Ten days prior to admission of the patient a pain developed on the right side of the head with fever. A dental consultation revealed that six teeth on the left side were diseased, and these were extracted five days later. Three days before admission a high fever developed, and he was given sulfadiazine. This fever continued, and when the right eye became swollen the patient was hospitalized.

The family history was noncontributory. The past history revealed that in February 1944 the patient had some teeth removed from the left upper jaw; this necessitated scraping the bone and taking some sutures. The day following this he blew his nose and the discharge was bloody with pus. Since then he has frequently had sinusitis.

Physical examination on admission revealed an extremely ill white man with a temperature of 104.8 F. rectally, pulse rate 110, respiratory rate 18, and blood pressure 145 systolic and 90 diastolic. The left eye appeared normal. The right eyelids were decidedly edematous and swollen. There was some purulent discharge present in the conjunctival sac, and there was slight exophthalmos. The conjunctiva was injected. The pupils reacted to light and accommodation and appeared regular. There was pronounced limitation of motion of the eyeballs. Fundal observations were normal. The nasal turbinates were bilaterally swollen and boggy, and there was some free mucopus posteriorly in the right middle meatus. There was definite rigidity of the neck, and the Kernig's sign was positive. There was hyperreflexia on the right, and a positive great toe reflex. The ears were normal, as were the heart, lungs and abdomen. The impression at that time was acute ethmoiditis with orbital extension and meningitis.

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[8] MacNeal, W. J., and Cavallo, M. E.: Streptococcic Bacteremia and Apparent Thrombosis of the Cavernous Sinus with Recovery, J. A. M. A. **109:** 2139-2141 (Dec. 25) 1937.

[9] Lyons, C.: The Treatment of Staphylococcal Cavernous Sinus Thrombophlebitis with Heparin and Chemotherapy, Ann. Surg. **113:** 113-114 (Jan.) 1941.

[10] Schall, L. A.: Treatment of Septic Thrombophlebitis of the Cavernous Sinus, J. A. M. A. **117:** 581-584 (Aug. 23) 1941.

[11] Lyons, C.: Penicillin Therapy of Surgical Infections in U. S. Army, J. A. M. A. **123:** *1007-1018 (Dec. 18)* 1943.

[12] Welty, R. F.: Bacterial Thrombophlebitis of a Cavernous Sinus with Recovery, Arch. Otolaryng. **43:** 70-72 (Jan.) 1946.

[13] Wolfe, W. C., and Gain, J. F.: Thrombosis of the Cavernous Sinus, Arch. Otolaryng. **41:** 79-84 (Jan.) 1945.

[14] Previously reported in the Bull. School Med. Univ. Maryland **29:** 151-153 (Jan.) 1945.

A spinal tap revealed the pressure to be 290 mm. of water. The Queckenstedt sign was negative. There were 5,600 white blood cells, 80 per cent polymorphonuclears, with a 3 plus reaction to the Pandy test. The smear revealed a few cocci of undetermined type, and the culture taken at this time was negative, as were all subsequent cultures. Ten thousand units of penicillin were administered intrathecally at this time, and the dosage was repeated twice a day for eight days. In addition the patient received 15,000 units of penicillin intramuscularly every three hours and 1 Gm. of sulfadiazine orally every four hours. Compresses of boric acid were applied constantly to the region of the right eye.

On admission the urinalysis revealed normal conditions. Examination of the blood disclosed: 57 per cent hemoglobin, 3,470,000 red blood cells, 15,600 white blood cells, 87 per cent polymorphonuclears and 13 per cent lymphocytes. The serologic test of the blood (Kahn) was negative, the nonprotein nitrogen 31 mg. and the blood sugar 120 mg. per hundred cubic centimeters. The sedimentation rate was 30 mm. (Wintrobe, corrected). The blood sulfadiazine level two days after admission was 7.6 mg. per hundred cubic centimeters.

The patient continued to run a septic temperature of 103 to 104 F. rectally for eight days. During this time the patient was delirious and continued unimproved. Intravenous fluids were given twice daily, and on the fifth day a retrobulbar exploration was done on the right eye by another surgeon. Pus was not found, and the same regimen was continued.

On the seventh day when the patient was seen in consultation by us he exhibited pronounced chemosis and injection of the bulbar and palpebral conjunctiva of the right eye. The lids were opened with difficulty because of extreme edema. The right pupil was dilated and fixed, and the fundus revealed dilatation of the veins and extreme narrowing of the arteries with indistinctness of the disk but without definite papilledema. There was decided exophthalmos. Visual acuity could not be determined because the patient was comatose. The nose was free of pus, and there was no tenderness elicted on palpation over the frontal, ethmoid or antral regions. The left eye was unaffected. An impression of cavernous sinus thrombosis was made, and the patient was given 500 cc. of whole blood at once. Sulfadiazine therapy was discontinued, and the intravenous injection of a solution of sulfapyridine sodium 2.5 Gm., twice daily, was begun. Penicillin therapy was continued intramuscularly. The patient began to improve and became responsive and rational on the ninth day but had only light perception in the right eye. The temperature began to drop and by the twelfth day was down to 100 F., rectally; the exophthalmos had begun to recede. The temperature returned to normal on the sixteenth day. The patient could now distinguish objects but could not read with this eye. The fundal picture had returned to normal.

The patient was discharged from the hospital on the thirty-second day and was able to read the smaller headlines of the newspaper. The exophthalmos had almost completely receded. The family physician has since reported that the vision returned to normal after a period of several months and there was no evidence of exophthalmos. Recent inquiry revealed that the patient was living and well without recurrence of the symptoms.

Case 3.—V. H., a white woman aged 31, was admitted to the hospital on the medical service in diabetic coma on Oct. 27, 1945. One week prior to admission the patient had a cold, which was followed by severe frontal headache and profuse nasal discharge. On the evening of admission she became drowsy and could not be aroused; she was brought to the accident room at 9 p. m.

Family and past histories revealed that one brother had died at the age of 42 with diabetes, that the mother had died of pernicious anemia, and that the patient had been known to have diabetes for two and one-half years.

Physical examination on admission revealed that the patient was in coma and had the odor of acetone on her breath. The temperature was 98 F., the pulse rate 132 and the respiratory rate 24. The conjunctivas of both eyes were inflamed, and the lids were somewhat edematous, this being most pronounced on the right side. The eyeballs were soft; the pupils were round, regular, appeared of equal size and reacted sluggishly to light. Ocular motility could not be tested. There was a definite general deviation of the nasal septum to the left. The turbinates were swollen, the mucosa was injected, and there was mucopurulent discharge on both sides. Both ear drums were moderately injected but intact. There was poor oral hygiene and many dental caries. The postpharynx was injected. The remainder of the physical examination revealed essentially normal conditions. The impression at this time was diabetic coma with bilateral antral and ethmoid sinusitis.

On admission the urinalysis showed 4 plus acetone and 4 plus sugar; the blood sugar level was 225 mg. per hundred cubic centimeters. A diabetic regimen was promptly instituted, and the following morning the urine showed a 4 plus sugar, 3 plus acetone and a blood sugar level of 173 mg. The blood contained 68 per cent hemoglobin; 4.35 million red blood cells and 15,600 white blood cells with polymorphonuclears 89 per cent, lymphocytes 3 per cent and monocytes 3 per cent. The serologic (Kahn) test of the blood was 4 plus on two occasions, and the sedimentation rate was 30 mm. (Wintrobe, corrected).

Immediately on admission, compresses of boric acid were constantly applied to the region of the patient's right eye, and 20,000 units of penicillin was administered intramuscularly every three hours. On Oct. 28, 1945 she became responsive but complained of severe pain in the right eye. By October 31 she was unable to open it.

At this time (October 31) there appeared an exophthalmos of the right eye, and ophthalmologic and otolaryngologic consultations were requested. Examination revealed dimness of vision in the right eye with pronounced swelling and inflammation of the lids. The lids were stuck together with a purulent exudate. The conjunctiva was decidedly injected, and the right pupil was larger than the left but reacted to light. There was a definite exophthalmos of the right eye, and ophthalmoscopic examination revealed dilatation of the retinal veins, "boxcar" occlusion of the arteries and haziness of the disk margins. The left eye showed only slight swelling of the lids. The right side of the nose was completely blocked by a purulent, foul-smelling discharge, with much crusting and scabbing high up in the middle meatus. This material was removed, and a large septal perforation was found at the osseocartilaginous junction with dirty, gray, necrotic edges. Examination of the left side of the nose revealed some purulent discharge with a swollen middle turbinate. The throat and ears were normal. The impression at this time was ethmoiditis on the right side, with thrombosis of the cavernous sinus and septal perforation, which was probably syphilitic in origin.

In addition to the 20,000 units of penicillin already being given intramuscularly every three hours, the patient was started on a regimen of 1 Gm. sulfadiazine orally every four hours, and "dicumarol" therapy was instituted. Local nasal medication with 1 per cent ephedrine in isotonic solution of sodium chloride was also begun.

Roentgen examination of the sinuses revealed clouding of both antrums and of the left ethmoid. The frontal sinuses were clear.

The patient continued to be seriously ill. The prothrombin time was kept constantly elevated to 30 seconds (undiluted) by "dicumarol" therapy. Two days later the left eye manifested a definite exophthalmos with venous congestion of the retinal vessels and the pathologic conditions in the right eye had increased in intensity since the previous examination. The patient was given supportive treatment throughout, including transfusions of whole blood.

In spite of this therapy the patient's clinical course was stormy, and bilateral optic atrophy was soon evident. By Nov. 15, 1945 the diabetes was well under control, the temperature was normal and the nasal discharge had almost disappeared. One week later antisyphilitic therapy was begun, using oxophenarsine hydrochloride and a bismuth compound, and the patient's general condition began to improve slightly.

The right eye still exhibited considerable exophthalmos, and *there was no perception of light.*

For the remainder of her stay in the hospital, which totaled seventy-five days, the patient continued her gradual improvement. The exophthalmos completely disappeared on the left side and was minimal on the right. On her discharge the Kahn reaction of the blood was negative and the diabetes was well controlled with insulin and a dietary regimen. She was ambulatory though totally blind in both eyes.

SUMMARY

The use of the terms phlebitis, thrombophlebitis, phlebothrombosis and aseptic thrombosis of the cavernous sinus is discussed and a classification of septic and aseptic thrombosis is presented.

Three cases of cavernous sinus thrombosis are reported, 2 with unilateral involvement and 1 with bilateral involvement, with 2 recoveries.

In the first case the condition was unilateral and was thought to follow adenotonsillectomy. The patient died in spite of the administration of sulfadiazine sodium intravenously and penicillin intramuscularly.

The second case followed dental extraction with probable secondary sinusitis and was complicated by meningitis. The involvement of the cavernous sinus remained unilateral. The patient showed little response to penicillin given intramuscularly and intrathecally and to sulfadiazine taken orally. Intravenous sulfapyridine sodium was substituted for oral sulfadiazine, and the patient showed immediate improvement with ultimate recovery.

The third case was believed to follow a gumma of the nasal septum with secondary infection in a person with uncontrolled diabetes. Treatment consisted of penicillin given intramuscularly and sulfadiazine and "dicumarol" orally. Although the condition became bilateral the patient recovered, but total blindness resulted.

CONCLUSIONS

1. Thrombosis of the cavernous sinus is commoner than is generally supposed.
2. The prognosis is still grave in spite of advances in the use of chemotherapy, anticoagulants and antibiotic agents.
3. The treatment of thrombosis of the cavernous sinus is purely medical, and surgical intervention is only indicated at the site of the origin of the infection to eradicate the focus.
4. The combined use of sulfonamide compounds, antibiotics (penicillin, streptomycin and so forth) and anticoagulants in large doses is strongly advised. If the case is unresponsive to one of the sulfonamide drugs another should be substituted, and the same is probably true of the antibiotic agents.
5. It is our opinion that the early employment of heparin and "dicumarol" administered simultaneously is desirable.

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BACILLARY DYSENTERY AS THE CAUSE OF REITER'S SYNDROME

(Arthritis with Nonspecific Urethritis and Conjunctivitis)

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In December 1916 Reiter[1] in Germany and Fiessinger and Leroy[2] in France independently described the symptom triad of arthritis, conjunctivitis and urethritis. The former ascribed the etiology to a spirochete, the latter to the dysentery bacillus. Perpetuated under the name of Reiter's disease, numerous cases have been described in many articles in the European literature.[3] There are six articles[4] in the American literature, none of which gives serious consideration to dysentery as a cause.

MATERIAL

The study of 176 cases of bacillary dysentery observed in 1943 in Algeria revealed 14 cases of postdysenteric arthritis.[5] Clinical and laboratory summaries of these cases are presented in the accompanying table.

The group includes 1 woman (case 14), 1 Negro man (case 5) and 12 white men. The average age was 27 years. Of these 14 patients, there were only 4 who had arthritis alone (cases 11, 12, 13 and 14). Three patients had only urethritis accompanying the arthritis (cases 8, 9 and 10). Seven patients presented the full triad of arthritis, urethritis and conjunctivitis (cases 1 to 7). In case 2 the patient gave a history decidedly suggestive of conjunctivitis, though no confirmatory observations were available. In all the others objective evidence of the triad was obtained. These 7 instances represent 4 per cent of the total cases of bacillary dysentery and one half of the total cases of postdysenteric arthritis seen in Algeria at this time. There were 5 other cases of possible postdysenteric arthritis, 1 with associated muscular atrophy and peripheral neuritis and 1 with conjunctivitis, but insufficient data are available to justify their inclusion in the present series.

The onset of the arthritis occurred at an average of fifteen days (minimum six, maximum forty-five) after the onset of dysentery. The onset of urethritis occurred at an average of eleven days (minimum four, maximum twenty-five) after the onset of dysentery. Conjunctivitis appeared at an average of twelve days (minimum six, maximum twenty-four) after the onset of the dysentery. It will be seen from the accompanying

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[3] (*a*) Lever, W. F., and Crawford, G. M.: Keratosis Blennorrhagica Without Gonorrhea (Reiter's Disease?) Arch. Dermat. & Syph. **49:** 389-397 (June) 1944. (*b*) Vallee, B. L.: Reiter's Disease: Review of the Literature with Presentation of a Case, Arch. Int. Med. **77:** 295-306 (March) 1946.

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Summary of Clinical and Laboratory Data on Fourteen Cases of Postdysenteric Arthritis

Case; Age; Adm. Date	Dysentery	Arthritis	Conjunctivitis	Urethritis	Blood Agglutination; Stool Culture	Sedimentation Rate (Mm./Hr.) W. B. C.	Comment
1. C. M. 23 yrs. 7/16/43	Diarrhea with chills and fever 102 F. 4 wks. prior to admission, 20 stools daily; duration 6 days	Severe; r. ankle 7/10; l. ankle 7/12; l. knee 7/13; aspirated 7/15; 150 cc. turbid straw fluid with 5 leukocytes per high power field; l. metatarsal joints, hips and l. shoulder subsequently involved	Mod. bilateral; velvety purulent discharge 7/14; duration 8 days; smears neg. for gonococcus	Moderate; mucoid discharge 7/16; meatus pouting; smears neg. for gonococcus; erosion lasted 14 days	S. paradysenteriae Y pos. 1:160; S. sonne (7/21) pos. 1:40; stool culture neg.	7/17 40 7/21 103 7/30 107 7/21 W.B.C. 10,100	Uric acid 3 mg./100 cc. 7/21; electrocardiogram neg. Onset: arthritis 24th day, conjunctivitis 24th day and urethritis 25th day; 7/19 brucellergen skin test neg.
2. R. B. 32 yrs. 7/25/43*	Diarrhea with low grade fever, onset 6/14, duration 7 days; no gastrointestinal symptoms on admission	R. elbow 6/24; l. knee 7/2; r. knee and l. ankle subsequently involved	Smarting of eyes noted by patient 6/20; unobserved	Mild; clear mucoid discharge 6/24; 2 days duration; smear neg. for gonococcus	S. paradysenteriae Y pos. 1:160; S. sonne (8/9) pos. 1:40; stool culture neg.	7/26 80 7/31 76 W.B.C. 9,000	Electrocardiogram neg.; uric acid 3 mg./100 cc.; roentgenogram r. elbow and l. knee neg. Onset: arthritis 10th day, conjunctivitis 6th day and urethritis 10th day
3. H. F. 31 yrs. 7/25/43* 7/12/43†	None though many cases in his group; 1 occasion 3 loose stools	R. knee 7/10; l. knee 7/11; proximal interphalangeal joints, l. 2d toe and r. shoulder	Mild; catarrhal 7/6	Mild; clear mucoid discharge 7/12; burning on urination; 3 to 4 days duration	S. paradysenteriae Y pos. 1:320; B. shigae; S. hirschfeldii, S. schottmülleri neg.; S. sonne pos. 1:40; stool culture neg.	7/26 103 W.B.C. 5,000	Uric acid 2.6 mg./100 cc. Onset: arthritis ?, conjunctivitis ? and urethritis ?
4. P. N. 21 yrs. 8/14/43	Severe diarrhea and fever; in bed 5 days 5/30; recurrence 7 days 6/15; recurrence 3 days 7/1	L. elbow 7/11; later l. ankle, l. knee, r. knee, both hips and wrists; 6½ wks. duration; severe	Keratitis severe with erosion l. eye 7/7; corneal infiltration; smears neg. for gonococci; occasional gram-pos. diplococci and gram-pos. and neg. rods; 6 wks. duration	Dysuria and urethral discharge 7/6; smear neg. for gonococci repeatedly; "pleomorphic gram-pos. organisms"; urine neg.; meatus showed superficial ulceration	S. sonne neg. 8/17; S. paradysenteriae Y pos. 1:320; stool culture neg.	8/15 100 8/16 105	Onset: arthritis 11th day, conjunctivitis 7th day and urethritis 6th day
5. A. M. 24 yrs. Negro 5/28/43	Diarrhea, cramping; fever 102 F.; onset 5/27; 3 days duration	L. metatarsal joint; swelling and severe tenderness 6/15	Acute, purulent conjunctivitis 6/16; no gram-neg. diplococci but numerous gram-neg. bacilli; culture neg.	Purulent discharge profuse 6/10; smears repeatedly neg. for gonococci; numerous gram-neg. bacilli; culture neg.	Stool pos. 6/2 for cysts of E. histolytica and course of emetine and carbarsone given; clinical course that of bacillary dysentery; no aggl. done; stool culture neg. 6/19	96 W.B.C. normal	Onset: arthritis 19th day, conjunctivitis 20th day and urethritis 14th day
6. R. C. 21 yrs. 9/23/43* 6/31/43†	Nov. 1942; Jan. 19, 1943; June 25, 1943	R. ankle swollen and hot 6/31; still painful 9/23	Mild 6/31	Cream white discharge 6/31; smear and culture neg. for gonococci; prostatic fluid neg.	S. paradysenteriae Y neg.; stool culture neg.	?	Onset: arthritis 8th day, conjunctivitis 8th day and urethritis 8th day
7. E. H. 27 yrs. 10/28/43	Mild diarrhea (3 stools daily) 9/23 to 9/26	L. 1st metatarsal 10/4; l. knee 10/5; aspirated 140 cc. sterile, yellow mucoid fluid 10/9; r. knee 10/14; r. wrist; little improvement after 3 wks.	Slight sticky discharge 10/6 to 10/10	Grayish discharge 10/5 to 10/16	S. paradysenteriae Y pos. 1:80; stool culture neg.	10/4 96 W.B.C. 13,500	Onset: arthritis 10th day, conjunctivitis 12th day and urethritis 11th day; roentgenogram of l. knee neg.
8. G. A. 24 yrs. 7/16/43	Acute dysentery 6/19 to 6/25; hospitalized	L. knee 6/27; l. shoulder and elbow; severe swelling of the knee; minimal improvement after 35 days	None	Mild, sticky secretion over meatus 7/4; dysuria 4 days duration; urine neg.	Aggl. 7/26; B. shigae pos. 1:320; S. paradysenteriae Y pos. 1:640; S. sonne pos. 1:320; stool culture pos.	7/25 95 W.B.C. 7,750	Uric acid 3.4 mg./100 cc. 7/18 Onset: arthritis 8th day, conjunctivitis none and urethritis 15th day; brucellergen skin test neg.
9. S. C. 38 yrs. 8/21/43* 6/?/43†	Acute dysentery 4 days, May 1943	L. knee 6/15; aspirated yellowish fluid; knee still tender and swollen on admission to hospital; interphalangeal joints of 1st and 2d toes l. foot and all on r. foot	None	Dysuria and cloudy urine 7 days; 2 to 3 days after diarrhea	S. sonne pos. 1:400; S. paradysenteriae Y pos. 1:100; B. shigae neg.	8/21 72 W.B.C. 6,490	Roentgenogram of knee showing "atrophy of disuse" Onset: arthritis 45th day, conjunctivitis none and urethritis 7th day
10. R. S. 25 yrs. 6/7/43	Severe diarrhea, onset 5/24; associated with abdominal cramps and chills of 4 days duration	R. knee 6/2; l. knee 6/4; pronounced hydrops; 150 cc. straw colored fluid, sterile; neg. aggl. studies to Shigella; l. ankle 6/13; pain and tenderness to motion; severe; mod. improvement in 1½ mos.	None	Burning on urination 5/28; few pus cells; moderate urethral discharge	B. shigae neg.; stool culture neg.	6/15 105	Roentgenograms of knees neg. Onset: arthritis 11th day, conjunctivitis none and urethritis 4th day
11. J. C. 22 yrs. 7/13/43	Acute diarrhea 3 days 7/1	Pain, tenderness and swelling of tarsal joints 7/8	None	None	S. paradysenteriae Y neg.; stool culture (7/24) pos. S. paradysenteriae	7/15 88 W.B.C. 16,200	Onset: arthritis 8th day, conjunctivitis none and urethritis none
12. A. A. 27 yrs. 6/26/43	Severe diarrhea with blood; chills and fever 10 days (onset 5/29)	L. hip 6/14; l. knee, l. and r. ankle, l. and r. shoulder	None	None	S. paradysenteriae Y pos. 1:160; S. sonne pos. 1:160	7/2 38	Roentgenogram l. hip neg. Onset: arthritis 16th day; brucellergen skin test neg.
13. C. H. 45 yrs. 6/19/43	Dysentery with fever 5/28	Fluid, pain in l. elbow; both knees and shoulder 6/10	None	None	Stool culture pos. for S. paradysenteriae	....	Uric acid 3.9 mg./100 cc.; peculiar skin lesions on legs; electrocardiogram low voltage on all leads Onset: arthritis 13th day
14. F. T. 34 yrs. Woman 11/7/43	Severe diarrhea with fever 7/27; exacerbation of diarrhea 9/1	Toes, distal and proximal interphalangeal joints; knees 8/18; ankles	......	......	Flexner H, pos. 1:80	Convalescent when seen in hospital	Onset: arthritis 22d day

table that the order of occurrence of the symptoms is variable.

One patient (case 3) experienced only a few loose stools. In 10 cases (1, 2, 5 to 11, 13) the dysentery was classified as mild to moderately severe, and in 3 cases (4, 12 and 14) it was considered severe. The grading of the severity of the dysentery was necessarily subject to large error, but it was our impression that there was little, if any, correlation between the severity of the dysentery and the severity of the complications. Indeed, some of the patients having the severest complications gave a history of mild or only moderately severe dysentery.

The arthritis was polyarticular in all but 2 instances (cases 5 and 6). The average number of joints involved was four. The joints involved, with the frequency of involvement, were as follows: shoulders four, wrists two, left knee three, both knees eight, ankles eleven, hips three, tarsals seven, left elbow three, right elbow one. In the cases of involvement of the knee there was frequently considerable fluid distending the joints. Aspiration was carried out in three cases (1, 7 and 10), and turbid, viscous, yellow fluid was obtained. The fluid in each instance was sterile and in 1 case (10) failed to agglutinate Bacterium shigae antigen (the only antigen available at the time). In this case the blood serum also failed to agglutinate B. shigae antigen.

The conjunctivitis was usually mild. This should be emphasized, for it is easy for both the physician and the patient to overlook it. In case 4, however, a severe keratoconjunctivitis occurred. Repeated examinations of the conjunctival discharges were negative for the gonococcus.

The urethritis was also mild in most of the cases. There were superficial erosions about the urethral meatus in 2 cases (1 and 4). Here again repeated bacteriologic examinations of the discharge were negative for the gonococcus. In 1 instance (case 4) pleomorphic gram-positive organisms were noted.

Stool cultures were positive in 3 cases (8, 11 and 13), negative in 8 and not carried out in 3. Blood agglutination tests were performed in 12 of the 14 cases (omitted in cases 5 and 13). Negative results were obtained in 3 cases (6, 10 and 11). In 2 cases (7 and 14) the tests were positive in titers of only 1:80. In the remainder the tests were positive to one or more strains in titers of 1:160 or higher. The strains involved were as follows: Shigella paradysenteriae Y, 7; Shigella Sonne, 2, and B. shigae, 1. Three cases showed significant positive results to tests with multiple strains.

The sedimentation rate in all cases was decidedly increased, frequently reaching values above 100 mm. per hour by the Westergren method. The white blood cell counts were elevated above 10,000 in only 2 cases (case 7, 13,500; case 11, 16,200).

Roentgen examination of various joints in several of the cases revealed no evidence of articular destruction. Brucellergen skin tests, electrocardiograms and determination of the uric acid content of the blood were also negative or within normal limits.

The course of the arthritis proved to be prolonged, and circumstances required the evacuation of the patients to the United States before we had an opportunity to observe the final outcome. Recurrences over an eight year period have been reported.[8b] Treatment was essentially symptomatic. Large doses of salicylates failed to give adequate relief, and opiates were necessary during the severest phase of the illness. Sulfonamide therapy was without effect. The conjunctivitis and urethritis were usually of brief duration, and in no case were they serious problems.

COMMENT

It is well established that arthritis may be an occasional complication of bacillary dysentery.[6] Noteworthy articles on dysenteric arthritis are those of Graham,[7] Stettner[8] and Klein.[9] The pathogenesis of the arthritic condition is not completely understood. Most observers look on it as an allergic reaction of the articular mucosa to dysenteric toxins.[10] Freiberg[11] has shown that an experimental arthritis simulating the proliferative arthritis of man may be produced in rabbits by the repeated injections of a bacterial extract of S. paradysenteriae Y. He concluded that the dysenteric arthritis of man may be a local allergic manifestation of a bacterial infection in the intestinal tract.

Dysenteric conjunctivitis is also well established as a clinical entity.[12] Voissius, in 1904,[13] in reporting a case of conjunctivitis and iridocyclitis following acute bacillary dysentery, gave an excellent and complete description which covers entirely the syndrome of conjunctivitis, arthritis and urethritis later reported by Reiter. It is of interest that a positive blood agglutination (1:320) for B. shigae was obtained. The reviews of Toulant and Sarrouy[14] and of Kiep[15] are particularly complete. In Reiter's original report[1] it is to be noted that the first entry on the clinical history is that the patient had a "diarrhea with a blood admixture" and that it was eight days later that the urethritis, conjunctivitis and arthritis appeared. No authors have been able to duplicate Reiter's observations in regard to a "spirochete forans." The contemporary (1916) report of Fiessinger and Leroy[2] described the complete symptom triad of Reiter in a discussion of the complications of an epidemic of bacillary dysentery in Somme, France. These authors[2] were the first to use the name conjunctivo-urethro-synovial syndrome.

The tendency in the European literature has been to doubt whether Reiter's disease is a distinct etiologic entity. Schittenhelm and Schlecht[16] and Kruspe,[17] Cimbal[18] and Beiglböck[19] consider Reiter's disease or syndrome secondary to an infection in the intestinal

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6. (*a*) Manson-Bahr, P.: Manson's Tropical Disease, ed. 11, Baltimore, Williams & Wilkins Company, 1941, p. 507. (*b*) Stitt, E. R., and Strong, R. P.: Diagnosis, Prevention and Treatment of Tropical Diseases, ed. 6, Philadelphia, The Blakiston Company, 1942. (*c*) Felsen, J.: Bacillary Dysentery Colitis and Enteritis, Philadelphia, W. B. Saunders Company, 1945.

7. Graham, G.: Arthritis in Dysentery: Its Causation, Prognosis and Treatment, Proc. Roy. Soc. Med. (Sect. Med.) **13**: 23-42 (Dec.) 1919-1920.

8. Stettner, E.: Gelenkrheumatismus und Ruhr, München. med. Wchnschr. **26**: 854-856 (June 26) 1917.

9. Klein, B. G.: The Serum Treatment of Bacillary Dysentery and on Dysenteric Arthritis, Lancet **2**: 775-778 (Nov. 1) 1919.

10. (*a*) Clifford, S. H.: Role of the Dysentery Bacillus in Arthritis Deformans (Type I [illegible] of Seven Cases, with a Note on the Intradermal [illegible] Am. J. Dis. Child. **32**: 72-83 (July) 1926. (*b*) [illegible] hritis of Bacillary Dysentery, Tr. Am. Clin. & [illegible] 1937. (*c*) Keefer, C. S.: Bacterial Infections [illegible] Tract, New England J. Med. **222**: 105-109 (Jan. 18) 1940.

11. Freiberg, J. A.: Allergy as a Factor in the Production of Proliferative Arthritis, Arch. Surg. **18**: 645-670 (Feb.) 1929.

12. Duke-Elder, W. S.: Textbook of Ophthalmology, St. Louis, C. V. Mosby Company, 1938, pp. 1547-1548.

13. Voissius, A.: Ein Fall von eitriger Conjunctivitis und Iridocyclitis beider Augen nach Ruhr, Ophth. klin. **8**: 17-20 (Jan. 20) 1904.

14. Toulant, P., and Sarrouy, C.: Les manifestations oculaires des dysenteries bacillaires, Arch. d'opht. **53**: 522-535 (July) 1936.

15. Kiep, W. H.: The Ocular Complications of Dysentery, Tr. Ophth. Soc. U. Kingdom **39**: 298-309, 1919.

16. Schittenhelm, A., and Schlecht, H.: Ueber Polyarthritis enterica, Deutsches Arch. f. klin. Med. **12**: 329-369 (June) 1918.

17. Kruspe, H.: Zur Aetiologie der Reiterschen Erkrankung, Dermat. Wchnschr. **112**: 457-464 (June) 1941.

18. Cimbal, O.: Das Reitersche Syndrom als Nachkrankheit der Ruhr, Arch. f. Ophth. **145**: 142-162 (Aug.) 1942.

19. Beiglböck, W.: Zur Behandlung der Reiterschen Krankheit (Ruhr-Rheumatismus), Deutsche med. Wchnschr. **69**: 803-805 (Nov. 26) 1943.

tract. P. Manson-Bahr[20] commented in discussing Beiglböck's work that "Reiter's disease appears to be nothing else than the familiar dysenteric polyarthritis with some superadded toxic manifestations which have been previously described."

The first report in the American literature was made in 1942 by Bauer and Engleman.[4a] Since that time there have been several other reports.[21] The literature has been completely covered in the reviews of Vallee[3b] and of Lever and Crawford.[3a] The possibility that Reiter's disease might be a complication of an intestinal infection has not been stressed by any American authors.

It seems probable that the symptom triad of Reiter's disease and the "uretero-conjunctivo-synovial syndrome" of Fiessinger and Leroy are the same disease entity. Conjunctivitis and urethritis have often been noted in patients whose disease has been diagnosed as dysenteric arthritis. Our cases 1 to 7 fulfil the clinical requirements of both authors. All 7 patients gave a history of dysentery or diarrhea. Significantly positive agglutination titers for Shigella organisms were obtained in 4 of the 6 cases in which the blood was tested.

CONCLUSION

Reiter's disease in our opinion is a particular combination of three of the recognized complications of bacillary dysentery—arthritis, urethritis and conjunctivitis.

CLINICAL AND PATHOLOGIC STUDIES IN SPRUE

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This report is concerned with clinical and pathologic observations in a group of 40 patients manifesting the sprue syndrome. These patients were observed at the Mount Sinai Hospital during the past fifteen years.

The central point of this symptom complex is an impairment in the absorption of fat, fat-soluble vitamins and some carbohydrates. As a result, there then may appear steatorrhea; weight loss of considerable degree; an anemia, usually of a hyperchromic macrocytic variety, and painful lesions of the mouth and tongue. Hypocalcemia with tetany and osteoporosis, pigmentation of the skin, hypoproteinemia, polyvalent deficiencies in vitamins, minerals and amino acids, as well as signs of hepatic damage are not infrequently seen.[1]

Of the 40 patients studied, the disease of 36 is designated as "primary sprue," that is, there were no roentgenologic or other evidences of organic changes in the intestinal tract that could account for the syndrome on clinical grounds. In 6 of the 36 patients, postmortem examinations confirmed the absence of gross systemic disease, although alterations were found in the intestinal canal and the mesenteric glands that were considered of interest. In addition 2 other patients died, 1 elsewhere and 1 at this hospital, where permission for autopsy could not be obtained. In 4 others gross pathologic alterations were encountered at necropsy which could be held responsible for the sprue syndrome. This group will be designated as "secondary sprue."

In an effort to see whether patients with the obvious gross changes in the intestinal tract differed in any way from those whose disease was designated as primary sprue, the two groups were separated, and their clinical courses were analyzed and compared.

PRIMARY SPRUE

General Characteristics.—The group with primary sprue comprised 36 patients, 13 men and 23 women (table 1). Of these, 15 were Latin Americans and the rest were first generation Americans of Central and Eastern European extraction. Eighteen were Jewish, 14 Puerto Rican, 1 Cuban, 2 American of Irish extraction and 1 Swedish. The preponderance of Jews and Puerto Ricans in this clinical material can in no way be considered as statistically significant, because this hospital population draws in large part on such groups. The age of the patients ranged from 16 to 73 years, the average being 41. There was only 1 patient each at the extreme ends of the scale.

In view of the differentiation between tropical and nontropical sprue that has been made by many workers in the field, it became of interest to ascertain whether the illness had its inception in the tropical or temperate zones. In this series 7 of the patients contracted their illness either while in the tropics of the Western or Eastern hemisphere, while 29 acquired the disease under our climatic conditions. There were many patients in the latter group who had migrated to the temperate zone, but in whom sprue had developed only after many years' residence here.

Observations of these patients were made over the course of one month to twelve years. The average period was 3.6 years.

Hematologic Observations.—The abnormalities of the hemogram are an essential part of the sprue syndrome (table 2). The hemoglobin values in our patients ranged from 14 to 100 per cent, the average being 62 per cent. Four patients who had a hemoglobin level of 35 per cent or less had bleeding in some form as a prominent feature (cases 7, 9, 20 and 35). The red blood cell counts varied between 0.8 to 5.5 million, the average being 3.0. The two lowest values (0.2 and 0.75) were again found in patients who had bleeding phenomena (cases 7 and 9).

In 19 patients the color index was over 1; in 12 it was 1; in 4 it was less than 1. In the last group bleeding was again a prominent symptom. It may be said, therefore, that 54.3 per cent of the patients manifested a hyperchromic, 34.4 per cent a normochromic and 11.4 per cent a hypochromic type of anemia. Macrocytosis was regularly associated with the hyperchromic and not infrequently with the normochromic group.

The white blood cell counts ranged from 1,950 to 13,900, the average being 6,712. Eight of the patients had 5,000 cells or less, and 6 had 10,000 or more. In 3 of the latter there were febrile rises of undetermined etiology.

In 14 patients the thrombocytes were examined. It was of interest that in as many as 6 they were below 100,000, but in only 1 were there clinical manifestations of bleeding (case 7). In 4 of these 6 patients the icterus index was elevated, and in 3 instances there was evidence of enlargement of the liver and/or spleen.

Examination of the bone marrow was made in 12 instances; in 5 the cells had an erythroblastic character of moderate to pronounced intensity, and in 4 there was a megaloblastosis of similar quality. Two examinations revealed normal conditions in patients in a period of remission. In the other patients, without exception, examinations of the bone marrow were made during the active stage of the disease. In 1 case there was a moderately fatty marrow in a patient near death and with extreme cachexia.

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[20] Beiglböck,[19] abstracted by P. Manson-Bahr, Trop. Dis. Bull. **41:** 571-572 (July) 1944.

[21] Colby.[4b] Rosenblum.[4c] Twiss and Douglas.[4d] Lever and Crawford.[3a] Vallee.[3b]

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Because of limitation of available space this article is abbreviated in THE JOURNAL by omission of the illustrations, tables 1, 2, 3, 4 and 6, and considerable portions of the text. The complete article will appear in the authors' reprints.

Stool Findings.—Steatorrhea has been generally accepted as the *conditio sine qua non* of sprue. By this we mean an elevation of the fat in the stool over the upper limit found in normal persons under conditions of the average mixed diet, that is, 15 to 25 per cent of the dried material. In sprue, stool fat-partition reveals only small amounts of neutral fat and large amounts of fatty acids and soaps.

As a rule the feces were bulky, frothy and liquid to semisolid in consistency (table 3). Diarrhea was present almost always. It is our experience that the characteristic sprue stool is not foul-smelling in contrast to that of known inflammatory disease, such as ulcerative colitis and regional ileitis, but rather is rancid in odor. In all the patients but 1 repeated examinations failed to reveal the presence of pathogenic bacteria, ova or parasites in the stool. In 1 patient, a Puerto Rican (case 28), Strongyloides stercoralis was found.

TABLE 5.—*Comparative Data*

	Primary Sprue	*Secondary* Sprue
Number of cases	36	4
Age range	16 to 73	33 to 55
Age average	41	44
Duration of symptoms prior to hospitalization (mos.)	80	4.75
Burning of mouth and tongue	Very frequent	Rare
Soreness and reddening	Frequent	Absent
Clubbing of fingers	Occasional	Occasional
Hemoglobin, percentage	62	74
Red blood cell count (millions)	3.0	3.9
Color index	In 89% 1 or >1	Usually <1
White blood cell count	6,712	10,525
Bone marrow	Erythroblastic or megaloblastic arrest	Normal
Gastric acidity	80% present	Present
Stool findings	Steatorrhea (fatty acids and soaps)	Steatorrhea (fatty acids and soaps)
Serum proteins, Gm./100 cc.	5.8	5.85
Serum calcium, mg./100 cc.	8.1	8.4
Serum phosphorus, mg./100 cc.	3.4	5.1
Phosphatase (alkaline), King-Armstrong units	17.9	?
Dextrose tolerance test—oral	Flat	Flat
Dextrose tolerance test—intravenous	Normal	Normal
Vitamin A blood level	Low	Low
Vitamin A tolerance test	Flat	Flat
Carotene blood levels	Low	Low
Pancreatic enzymes	Present	Present
Liver function	May be impaired	Normal (?)
Therapeutic response		
Hematologic	0 to 4+	No response
Function of bowels	0 to 4+	No response
General	0 to 4+	No response
Roentgenologic observations	Deficiency pattern	Deficiency pattern

However, there do exist patients presenting the typical sprue syndrome who have only one or two formed bowel movements a day, even at the height of their disease. These stools may nevertheless have a high fat content, as in cases 15 (32.5 per cent) and 23 (46 per cent).

In 18 instances the total fat content in percentage of dried weight averaged 38 per cent. In 4 other patients an analysis of the fat, made while the patient was on a fat-restricted diet revealed an average of 14.7 per cent. The great difference in these two values emphasizes the importance of the fat content in the diet at the time when the determinations are performed. Such low figures do not impair the validity of the diagnosis of steatorrhea under conditions of greatly limited fat intake.

The 4 patients (cases 11, 15, 23 and 24) who had formed stools at the onset showed some clinical features in common. All 4 undoubtedly had sprue. With 1 exception (case 24) hydrochloric acid was present in the stomach. Two patients (cases 11 and 14) had hemorrhagic manifestations, while in the remaining 2 thrombopenia was present (cases 25 and 23), in the former with jaundice. The significance of these observations, which may be purely coincidental, cannot be evaluated at the present writing.

Characteristically, the stool of sprue is free of blood, both gross and occult. This was borne out in all except 5 instances, in 4 of which there were severe manifestations of the hemorrhagic diathesis. The fifth patient (case 2) died with renal failure (azotemia).

Chemical Studies.—The chemical studies included determination of total serum proteins, the albumin-globulin ratio, the calcium, phosphorus and phosphatase content, as well as the pancreatic enzymes in the duodenal contents. Dextrose tolerance tests were performed orally and intravenously. Fat or vitamin A tolerance tests were performed in the standard way. To evaluate the function of the liver, icterus index, total and esterified cholesterol, the prothrombin time and in a few instances hippuric acid synthesis, galactose tolerance and cephalin flocculation tests were done.

Vitamin A and Fat Tolerance Test.—In 17 patients the ability to absorb fat and/or fat-soluble vitamins was tested using cream and vitamin A, respectively (table 4). In 2 (cases 22 and 24) the absorption of the fat was decidedly impaired, the fasting and postprandial level of the total serum lipids being almost identical. Similar observations were made with vitamin A in 15 patients. In 12, during the active stages of the disease the fasting vitamin A level ranged between 15 and 63 micrograms, the average being 35 micrograms per hundred cubic centimeters. This represented a reduction of about 50 per cent when compared with that found in the average hospital population. The maximum elevation of the vitamin A serum content four hours after the administration of 180,000 international units varied between 28 and 85 micrograms, the average being 44.3 micrograms per hundred cubic centimeters.

Therefore, the disturbance in vitamin A metabolism in sprue is characterized by low fasting figures and lack of elevation in the postabsorptive phase.[3] A similar situation exists with regard to the carotene levels of the serum. The values are extremely low during the phases of the active disease. Even during remission the disturbed pattern in vitamin A and carotene metabolism may persist, although in a modified form. Three patients (cases 9, 16 and 23) examined at such a time showed average fasting levels of 61.6 micrograms per hundred cubic centimeters, with a postprandial elevation averaging 80 micrograms. In other instances in which it was possible to make serial studies during the period of observation slight improvement or none at all was observed. Although the fasting values rose considerably in 3 patients (cases 33, 35 and 36) there was no improvement noted in their absorptive capacity. However, patient 31 failed to show a change of the fasting or postabsorptive levels. This is all the more remarkable in the face of the improvement in the general condition, the diarrhea and the hematic picture. Any analogy may be drawn, possibly, between this observation, the persistent steatorrhea and the maintained roentgenologic abnormalities of the small bowel seen in some patients during periods of remission.

Response to Therapy.—It is well established that sprue is amenable to specific therapy. This consisted in these patients of a high protein and low fat diet with moderate amounts of carbohydrates, preferably in the form of monosaccharides." The diet was supplemented by large amounts of vitamins, especially of the B complex, parenteral extract of liver and, of late, folic acid.[4]

A classification based on a 1 plus to 4 plus change in the reticulocytes, hemoglobin and red blood cells disclosed that 6 patients had a 4 plus response, 14 a 3 plus response and 9 a 1 plus response to therapy. One patient died of undetermined cause with no response at all (case 2). In addition, it must be stated that fatalities occurred even in those patients with good original responses of 1 to 3 plus.

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[3] Adlersberg, D., and Sobotka, H.: Fat and Vitamin A Absorption in Sprue and Jejunoileitis, Gastroenterology **1**: 357, 1943. Adlersberg, D.: Fat and Vitamin A Absorption in Sprue, New York State J. Med. **44**: 606, 1944.

In the clinical course of the successfully treated patients there was a remarkable improvement in bowel function with a subsidence of diarrheal movements concomitant with improvement of the general condition and the hematic picture. Analyses of the stool revealed likewise a diminished fat content in some instances, for example, cases 4 (47 to 27 per cent), 5 (40 to 13 per cent) and 22 (55 to 25 per cent), while in others the fat content of the formed infrequent "normal" stool may remain high, e. g., case 36 (55 to 34 per cent). These latter instances may thus resemble conditions in a group of sprue patients who never consult the physician with a complaint of diarrhea.

A similar classification on a 1 plus to 4 plus basis with regard to the amelioration of the bowel function disclosed that 27 of the 36 patients had an improvement of 2 to 4 plus. In all of them the frequency of diarrhea diminished considerably, and in those with a 4 plus response a formed stool was achieved; but even in the latter bowel disturbances frequently could not be avoided when the intake of fat was increased. There were 4 patients in the group having sprue without diarrhea (cases 11, 15, 23 and 24), so that one could not anticipate any change in them. Four patients (cases 32, 33, 35 and 40), of which 1 (case 40) was treated with folic acid, failed to show improvement in this regard. In this group 3 patients represented the therapy-resistant type of sprue, since they did not respond well in any respect, while 1 did show hematologic progress after liver therapy and blood transfusions. In 1 patient who died no adequate observations were available.

Although the initial hematologic response was relatively not so striking as the coprologic response, nevertheless in long range terms of return to normalcy, the elevation of the blood count superseded the intestinal improvement. This was so because a 4 plus stool response still carried with it the ever present tendency to looseness of the bowels under certain circumstances, such as emotional stress, intercurrent infection and high fat content of the diet.

As far as the effect on the roentgenologic findings was concerned, it was found that in the course of successful therapy the disturbed motility as well as the deficiency pattern of the small intestine may revert to normal or at least improve considerably. Nevertheless, no set rule can be laid down, since in other instances an abnormal pattern may persist despite improvement in the general condition and the bowel function of the patient.

Taken all in all, including gain in weight, sense of well-being, and alleviation of glossitis, 27 patients showed a remarkable response to specific therapy, 6 a moderate improvement and 3 none at all. This entire group included 8 fatalities, in some of whom the early response to therapy was favorable. Of these, 6 came to necropsy.

SECONDARY SPRUE

In this series there were 4 patients (cases 14, 21, 28 and 34) with secondary sprue, of whom 2 were men and 2 women. Only 1 was a Latin American (Puerto Rican); 2 were Jewish of Central European extraction and 1 was American of Irish origin. Their ages ranged from 33 to 55 and averaged 44.

The duration of symptoms prior to the need for hospitalization ranged from three to six months, averaging 4.75 months (table 1). As in primary sprue, these patients were underweight, the average being 104 pounds (47 Kg.) weight on admission and 102 pounds (46 Kg.) on discharge. The net loss of weight was 2 pounds (1 Kg.). With the exception of 1 patient (case 14), who gained 5 pounds (2.3 Kg.) transiently, all lost weight.

Atrophy of the tongue was encountered 3 times, cheilosis twice in this group. Burning of the mouth was present only once. Striking soreness of the mouth with fiery reddening was not observed. In only 1 of these patients (case 21) was unequivocal pigmentation of the skin present. Clubbing of the fingers was observed in only 1 patient (case 14), and this was of a mild degree.

Hematologic Data.—The hemoglobin ranged from 60 to 95 per cent, the average being 74 per cent (table 2). The red blood cell count varied from 3.4 to 4.4 million, the average being 3.9 million. An analysis of the color indexes disclosed that 1 patient was normochromic and 3 were hypochromic. In none of these patients was macrocytosis present. The white blood cell count ranged from 6,500 to 12,700 and averaged 10,500. Febrile rises were present in 2 patients (cases 21 and 28). No observations on blood platelets were made. No bleeding phenomena were observed in any of the patients of this group. The bone marrow was normal in 3 instances and hypoplastic in 1.

Stool.—All 4 patients had light colored, fatty, foamy, bulky stools whose consistency varied from a liquid to a semisolid state. They were indistinguishable from the stools of sprue in every respect. In only 1 instance (case 14) was quantitative analysis for total fat made, and this proved to be 47 per cent of the dried weight. In 3 of the 4 patients occult blood was found regularly (table 3).

Roentgenologic Observations.—In all these cases roentgenologic study revealed abnormalities of the small intestine resembling the deficiency pattern seen in sprue. In patient 14 there was in addition a type of serration of the small intestinal loops which did not exclude the diagnostic possibility of an ulcerative process.

Response to Therapy.—The response to therapy in these patients, of whom only 3 received liver parenterally, was uniformly poor. Indeed, all 4 of them died. In only 1 patient (case 34) was there improvement in the quality of the stools, but only transient amelioration of the blood picture.

POSTMORTEM FINDINGS

Of the 12 patients who eventually died of sprue, 10 came to necropsy. Of these, 6 had primary sprue (cases 1, 7, 29, 30, 31 and 35) and 4 (cases 14, 21, 28 and 34) had secondary sprue. The essential clinical data of the 10 patients are available in tables 1, 2, 3, 4 and 6, the pathologic findings are summarized in table 7.

PRIMARY SPRUE

Of the 6 patients with primary sprue, patient 1 died after an appendectomy for acute appendicitis and patient 31, twenty-five days after resection of the sigmoid colon for volvulus, with subsequent purulent pyelonephritis. Patient 35 succumbed with great rapidity to an acute necrotizing laryngotracheitis, from which an atypical type B influenza virus was recovered. Patients 7 and 29 died of a tetanic and hemorrhagic syndrome, associated in the latter with necrosis of the liver. Patient 30 died of a progressive cachexia terminating in marantic thromboses of the dural sinuses and cerebral veins.

Small Intestine.—Although the small intestine was grossly described as being normal in patient 1, unfortunately no record of histologic examination or tissue for restudy could be obtained. Patient 7 showed, as the most striking abnormality, large amounts of a granular pigment identified as hemofuscin (fig. 1). This was found only within the sarcoplasm of the cells comprising the muscularis propria and was present in greater amounts proximally than distally. Similar findings, but to such a degree that it could be appreciated grossly as a brownish discoloration of the muscularis, were present in patient 31 (fig. 2). In this instance there was likewise a considerable paucity and separation of the cells of the muscular tunic.

The small intestine of patient 30 presented *nothing grossly* or microscopically of significance pertaining to the sprue syndrome from which she had suffered for many years. Two small chondromas of the proximal jejunum were found and a few nonconspicuous fibrous adhesions which stemmed most probably from the previous operation. In both patients 29 and 35 the small intestine appeared normal grossly, although in the former the examination with a hand lens revealed scattered foci where the mucosal surfaces appeared more velvety than normal. On microscopic study remarkable lesions consisting of hyaline bands and deformities of the villus such as clubbing were *found in all* portions of the small intestine (fig. 3). These *lesions have* received detailed study elsewhere [5] by one of us (J. S.). Except for an increase over the expected number of leukocytes in the lamina propria and occasional bizarre villus shapes, no morphologic abnormalities were encountered in patient 35.

TABLE 7.—*Summary of*

Case	Stomach	Small Intestine	Large Intestine	Mesenteric Lymph Node	Pancreas	Liver
Primary sprue						
1	Gross: atrophy	Normal	*Normal*	Normal	Normal	1,920 Gm.
	Micro.: atrophy	No info.	Normal	*No info.*	Normal	Centrolobular fibrosis; fat moderate
7	Gross: flat, pale	*Congestion*	Congestion	Enlarged	Normal	1,240 Gm.
	Micro.: within normal *limits*	Marked hemofuscinosis of muscularis propria	Mild hemofuscinosis	Within normal limits	Interlobular *fibrosis, moderate*	Congestion
29	Gross: normal	Normal, "velvety mucosa"	Normal	Enlarged	Normal	1,100 Gm.
	Micro.: slight atrophy of pyloric mucosa	Villus clubbing with hyaline villus bands	Much mucus	Chronic lymph*adenitis* *	Some acinar atrophy	"Acute yellow atrophy"
30	Gross: atrophy	Normal	Normal	*Normal*	Enlarged	2,080 Gm.
	Micro.: autolysis, small myoma	Normal except for 2 serosal chondromas and some fibrous adhesions	*Normal*	Normal	Fine fibrosis	Extreme steatosis
31	Gross: massive dilatation	Massive dilatation; brownish pigmentation *of the muscularis*	Normal except for brownish pigmentation of the muscularis	Enlarged	Normal	1,875 Gm.
	Micro.: hemofuscin in muscle	Hemofuscinosis of the muscularis propria; atrophy of the muscularis	Hemofuscinosis of *the muscularis propria*	Unusual, disproportionate trabeculation	Severe interlobular and intralobular fibrosis	Congestion
35	Gross: normal	Normal	Normal	*Enlarged*	Normal	1,580 Gm.
	Micro.: normal	Increased leukocytes in lamina propria; occasional bizarre villus shapes	*Endometriosis, focal*	Unusual, disproportionate trabeculation	Intralobular fibrosis	Normal
Secondary sprue						
14	Gross: ulcerated lymphosarcoma	Lymphosa; involvement with jejunojejunal and multiple ileal fistulas; entire thickness of bowel involved	*Normal*	Enlarged nodes (tumor)	Normal	1,440 Gm.
	Micro.: lymphosa; with ulceration	....	Normal	Enlarged nodes; *pigment*	Normal	Congestion; tumor
21	Gross: normal	Normal	Normal	Normal	Some fat necrosis	2,600 Gm.
	Micro.: amyloid, with some adjacent round cell foci	Extensive amyloid deposition in stratum proprium, basement membrane and vessels of submucosa	Small infrequent *foci of acute proctocolitis*	Foci of acute lymphadenitis	Moderate interlobular fibrosis	Extensive amyloid deposition with liver cell atrophy
28	Gross: normal	*Normal*	One ulceration	Enlarged, firm	Normal	1,340 Gm.; atrophy
	Micro.: normal	Villus and submucosal collection of lipoid-containing macrophages	*Normal otherwise*	Granulomatous giant cell reaction with lipoid-containing macrophages	Normal	Miliary tuberculosis
34	Gross: diffuse congestion	Smooth, pale mucosa with thin wall	*Severe congestion,* some erosions	Atrophy	Normal	1,400 Gm. (enlarged for this patient)
	Micro.: normal	Amyloid deposition in stratum proprium and vessels	*Normal*	Atrophy	Slight diffuse fibrosis	Focal congestion

* This diagnosis was made on a node biopsied during an exploratory laparotomy three months after the onset of illness.

Mesenteric Lymph Nodes.—The mesenteric lymph nodes which lie astride the absorption pathways of the small intestine deserve careful consideration in any case of malabsorption. No information was available in patient 1, although there were presumably no gross changes. Patients 7 and 30 revealed no significant findings in contrast to patients 29, 31 and 35 in whom the nodes were enlarged to at least twice the normal size. A mild chronic lymphadenitis was present in patient 29. The nodes in both patients 21 (fig. 4) and 35 (fig. 5) were characterized by an unusual broad fibrous trabeculation, whose counterpart was not seen in sections of our control group of 40 other mesenteric lymph nodes from cases of all types (fig. 6).

Spleen.—A splenomegaly of mild degree was present in patients 1 and 35 (490 and 300 Gm., respectively). In the former there were associated congestive hepatic changes and terminal infection. In the latter the morphologic alterations could be ascribed to the old operative intervention for a left subdiaphragmatic abscess and to the fulminating respiratory infection at the end.

Findings at Necropsy

Spleen	Bone Marrow	Adrenals	Parathyroid	Skin	Comment
490 Gm.	Spongy, red	Normal	No info.	No info.	Cause of death: appendicitis
Hyperemia; fibrosis; "acute splenitis"	Erythroid hyperplasia	Normal			
150 Gm. (enlarged)	Spongy, red	Normal	Normal	Normal	Cause of death: multiple hemorrhages
Hyperemia; lining endothelial hyperplasia	Decided erythroid hyperplasia	Normal	Normal	Iron free pigmentation, basal layer	Deformed dwarf
210 Gm.	Spongy, red	Normal	Normal	Pigmentation; follicular hyperkeratosis	Cause of death: liver necrosis and multiple hemorrhages
"Acute splenitis"	Increased fat, paucity of megakaryocytes; erythroid activity good	Normal	Congestion and hemorrhages	Melanin	
75 Gm.	Normal	Normal	Normal	Normal	Cause of death: marantic thrombosis of dural sinus and cerebral veins
Fibrosis; hemosiderosis	Increased fat with pronounced erythroid activity	Normal	Conspicuous connective tissue proliferation	....	General atrophy of viscera except liver and pancreas
190 Gm.	Spongy, red	Autolysis	Normal	Pigmentation	Cause of death: volvulus of the sigmoid with resection; and acute purulent pyelonephritis
"Acute splenitis"	Active myeloid and erythroid series	Autolysis	....	Melanin; hemosiderosis, slight	Hemofuscinosis; old "neurodermatitis" and brawny edema of the legs
300 Gm.	Spongy, red	Normal	Normal	Normal	Cause of death: acute necrotizing laryngotracheitis (influenza virus B)
Fibrosis and "acute splenitis"	Increased fat; increased erythroid activity	Autolysis	Normal	....	Status 1 yr. after drainage of left subphrenic abscess
175 Gm.	Spongy, red	Normal	No info.	No info.	Cause of death: intestinal obstruction
Congestion	Active in all series	Reticularis heavily pigmented	....	....	Abdominal lymphosarcomatosis; chronic adhesive peritonitis; general pigmentation, not intestinal; pigmentation in lymph nodes, testes and seminal vesicles
250 Gm.	Spongy, red	Normal	No info.	Diffuse pronounced pigmentation	Cause of death: hypernephroma
Extensive amyloid deposition	Normal except for amyloid	Amyloid deposition	....	Melanin in basal layers	Generalized amyloidosis; azotemia; biliary calculus
120 Gm.	Negative	Lipoid-poor	Normal	No info.	Cause of death: disseminated tuberculosis
Miliary tuberculosis hemosiderosis	General hypoplasia	Fresh tubercle; fat atrophy	....	....	Intestinal lipodystrophy (Whipple's disease)
Surgically removed 14 yrs. before	Spongy, red	Lipoid-poor	Normal	Pigmentation (focal)	Cause of death: Hodgkin's disease
....	Normal; active erythroid series	Normal	Normal	Melanin	Amyloidosis of heart and small intestines; status 8 yrs. after radio therapy; biliary calculi

Liver.—Although patient 1 had a hepatomegaly (1,920 Gm.) with fatty changes and a centrolobular fibrosis of moderate degree and patient 31 a slight hepatic enlargement (1,875 Gm.) due principally to congestion, these alterations were not nearly so striking as those observed in patients 29 and 30. The former had a severe necrosis of the liver and the latter a steatosis of such a degree that liver parenchyma was not visible in many of the fields. Patients 7 and 35 had no anatomic abnormalities.

The 150 Gm. spleen of patient 7, a female dwarf, represented a mild splenomegaly due to systemic hemorrhage, in part, and to sinus hyperplasia of undetermined origin. In both patients 29 (210 Gm.) and 31 (190 Gm.) the small increase was due to the reaction from systemic hemorrhages and infection, respectively. In patient 30 there was diminution in the size of the spleen (75 Gm.) associated with general visceral atrophy, the exceptions having previously been noted. Histologically, fibrosis and a moderate degree of hemosiderosis were observed.

SECONDARY SPRUE

Of the 4 patients with secondary sprue, patient 14 died in a bout of small intestinal obstruction subsequent to lymphosarcoma. Patient 21 succumbed to the combined effects of a malignant renal tumor (hypernephroma) and generalized amyloid disease with resultant renal insufficiency. The course of patient 28 was terminated by a fulminating widespread miliary tuberculosis, while patient 34 wasted away gradually because of the underlying primary condition, Hodgkin's granuloma, which preceded her amyloid disease.

Small Intestine.—Almost no portion of the small bowel was spared by lymphosarcoma in patient 14. The mucosa and all the components of the bowel wall were involved, with multiple fistulous tract formation in the jejunum and the ileum. The lumen itself was not compromised anywhere. The gross appearances, except for some thinning of the bowel wall in patients 21, 28 and 34, were essentially those of normal small intestinal tracts. Histologically, however, a different picture was obtained. Patient 21 showed extensive deposition of amyloid material lying along the basement membrane at the absorbing surface, clumps of amyloid in the reticular framework of the villus and involvement of the vessel walls, especially of the submucosa (fig. 7). A similar picture in which, however, the submucosal vessels were relatively more involved was presented by patient 34 (fig. 8). Patient 28 showed the classic features of intestinal lipodystrophy (Whipple's disease). Despite the severest autolytic change, "sections of small intestine showed almost confluent collections of lipoid containing uninucleated cells . . . which virtually replaced the normal contents of the villi . . . down to the muscularis mucosae."[4]

Mesenteric Lymph Nodes.—In patient 14 there was massive involvement of the mesenteric glands by tumor tissue to such a degree that absorption was most likely mechanically impaired. A similar massive involvement was present in patient 28, due this time to nodes which appeared grossly "yellowish and homogeneous," and microscopically showed granulomatous giant cell reaction with many lipoid-containing macrophages.

In decided contrast to the 2 cases just mentioned, the mesenteric glands of patients 21 and 34 revealed no lesions capable of causing interference with intestinal resorption. Except for an incidental focus of acute inflammation in one of the nodes of patient 21, there were no abnormalities. Patient 34 had nodes that were not even of normal size, while histologically they showed merely a severe depletion of the lymphoid elements.

Liver.—A hepatomegaly of considerable proportions was present only in patient 21 (2,600 Gm.), secondary to extensive deposition of amyloid material. Subsequent hepatic cellular compression was present. The enlargement of the liver in patient 34 could be accounted for by congestion. The organs of patients 14 and 28 were not remarkable in themselves and showed focal evidence of lymphosarcoma and recent tuberculosis, respectively.

Spleen.—The moderate splenomegaly (250 Gm.) which existed in patient 21 could be accounted for by amyloidosis. There were no changes which might perhaps be significant for the sprue syndrome in patients 21 and 28. The spleen of patient 34 had been removed surgically fourteen years previously for hemolytic icterus.

COMMENT

The foregoing analysis of primary and secondary sprue is incomplete in many respects. The group having primary sprue comprises 36 patients, the group with secondary sprue only 4. The available data permit delineation of primary and secondary sprue. While there are some similarities, the prevailing dissimilarity may be used for differential diagnosis (table 5). The age range is almost identical in both groups, the averages being 41 and 44 years.

There is a striking difference in the average duration of the disease before hospitalization became necessary: 80 months in primary and 4.75 months in secondary sprue. In other words, the average patient with primary sprue had been suffering from the symptoms of the disease for many years before hospitalization became necessary because this disease, like most of the other nutritional disorder, is characterized by spontaneous remission and exacerbations, not infrequently on a seasonal basis. In contradistinction, the organic disease associated with secondary sprue showed in all patients a rapidly progressive course with eventual fatal outcome and thus required hospitalization after a comparatively short period of four to five months. Considerable loss of weight was a feature that both groups had in common.

While lesions of the mouth and tongue were outstanding clinical signs in primary sprue they seemed to be of minor importance in secondary sprue. Burning and soreness of the mouth and tongue, which interfered seriously with alimentation in primary sprue, were only an occasional minor complaint in secondary sprue.

Clubbing of the fingers was infrequent both in primary and in secondary sprue. Its cause in primary sprue was obscure. It was nonetheless obscure in 1 instance of secondary sprue (case 14), in which there was massive involvement of the intestine by lymphosarcoma. Such clubbing is not infrequently seen in other conditions associated with equally severe lesions of other types, that is, ulcerative colitis.

The hematologic observations differed considerably in the two groups. Although secondary sprue was characterized by more or less serious organic disease, the hemoglobin and erythrocytes were on a higher level than in primary sprue: hemoglobin 62 and 74 per cent, and erythrocytes 3.0 and 3.9 million, respectively. The color index definitely is of differential diagnostic aid. In 89 per cent of the cases of primary sprue the color index was 1 or less than 1. In secondary sprue it was invariably less than 1. In other words, a persistently low color index in the absence of bleeding phenomena together with obvious iron deficiency in a case of sprue syndrome should be considered highly suspicious of secondary sprue. The leukocyte cell count averaged 6,712 in primary and 10,525 in secondary sprue. The severe case of primary sprue usually showed leukopenia in association with macrocytic hyperchromic anemia. In contrast secondary sprue showed a tendency to moderate leukocytosis in association with mild hypochromic anemia. In the graver manifestation of the disease, primary sprue was characterized by low platelet counts, low prothrombin levels and evidences of general bleeding, while secondary sprue showed absence of the last mentioned. The bone marrow in the active stages of the disease was characteristically erythroblastic or megaloblastic in primary and essentially normal in secondary sprue.

The findings in the varied studies of gastrointestinal function were similar in both groups. Presence of free hydrochloric acid was encountered almost regularly in both groups. The type of diarrhea and steatorrhea was similar in both groups. Frequent, bulky, frothy, loose to semisolid stools containing only small amounts of neutral fat and an abundance of fatty acids and soaps were observed. The average fat content of the dried fecal material was 38 per cent in primary sprue; a quantitative fat analysis was performed in only 1 case of secondary sprue and proved to be 47 per cent.

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[4] We are indebted for the postmortem findings in this case to the Department of Pathology, Johns Hopkins Hospital, Baltimore.

There was no noteworthy difference in the roentgenologic observations. In both groups disturbed motility and alteration of the pattern (deficiency pattern) were the characteristic features. Only in 1 case of secondary sprue (case 14) were there peculiar areas of constriction and serration suggestive of a different type of intestinal involvement. Thus, careful roentgenologic studies may prove in some instances to be of great help in revealing the underlying intestinal disease in cases of secondary sprue.

The chemical analysis of the blood failed to reveal any characteristic differences between the two groups. The blood protein levels were low normal in both (5.8 and 5.85 Gm. per hundred cubic centimeters). Pronounced hypoproteinemia was a rare finding in some of the most serious cases of primary sprue. The absence of decided hypoproteinemia in secondary sprue is not significant in view of the small number of cases observed.

The calcium content of the serum was low in both groups, 8.1 and 8.4 mg. per hundred cubic centimeters, and manifestations of tetany were observed. Thus, the presence or absence of tetany is not of differential diagnostic importance. The serum phosphorus tended to be low in some instances of primary sprue, the average being 3.4 mg. per hundred cubic centimeters. The corresponding figure in secondary sprue was 5.1 mg. While elevation of the alkaline serum phosphatase was frequent in primary sprue (average 17.9 King-Armstrong units) and was associated with osteoporosis, no corresponding determinations were available in secondary sprue.

The dextrose tolerance tests presented typically flat curves in both groups, while the blood sugar curves after intravenous administration of the sugar showed as a rule the normal elevation and decrease of the blood sugar level.

The alterations of the vitamin A metabolism were also identical in both groups: extremely low levels of both vitamin A and carotene in the blood and lack of a postprandial elevation of the vitamin A level in the vitamin A tolerance test. The carotene concentration of the blood was strikingly low in both groups. Pancreatic enzymes were found to be present in the duodenal content in primary and secondary sprue.

In some instances of primary sprue enlargement of the liver and impaired hepatic function were found; other observations included mild icterus, low levels of blood cholesterol and cholesterol esters and impairment of hippuric acid synthesis. While corresponding determinations were not performed in secondary sprue, none of the patients had icterus or any clinical evidence of hepatic dysfunction.

The therapeutic response was certainly of diagnostic importance. With few exceptions there was a definite improvement of the hematic picture and the bowel function in primary sprue, while the progressive course and fatal termination of secondary sprue could not be influenced by therapy.

Thus, the clinical differentiation of primary versus secondary sprue was possible on the basis of differences in the history and duration of symptoms, the presence of typical oral lesions, the different hematologic findings and the response to specific therapy.

Analysis of the pathologic data in primary and secondary sprue offers an explanation for some differences in the clinical picture. Many other problems remain obscure and require careful additional study. The relatively short history and duration of symptoms in secondary sprue becomes understandable. The underlying morbid process leads to a rapid fatal termination. In contrast, primary sprue is a chronic disease with periods of remission and relapse. The typical oral and lingual lesions of primary sprue apparently require many months or years for their full development and are therefore only of minor importance in secondary sprue. They must be considered in the light of our present knowledge as evidence of nutritional deficiency, for instance, of factors of the vitamin B complex (nicotinic acid, riboflavin, folic acid and possibly other factors as well). This deficiency plays only a minor role in the short "life history" of secondary sprue.

The hematologic differences in both groups may be similarly explained. Primary sprue is characterized by a macrocytic, hyperchromic anemia with erythroblastic and/or megaloblastic arrest of the bone marrow and thus resembles other macrocytic anemias (addisonian anemia, macrocytic nutritional anemia, and the like). On the other hand, secondary sprue presents a hypochromic type of anemia with a normal bone marrow as usually seen in wasting disease. The therapeutic response in primary sprue is based on replacement of the deficient nutritional factors by the administration of extract of liver or folic acid. While the majority of cases of primary sprue show a dramatic therapeutic result, no response can be expected in secondary sprue, which is not of nutritional origin.

The pathologic findings in sprue will be discussed only briefly. Striking anatomic alterations are not commonly observed in primary sprue of either the tropical or nontropical variety. What findings there are consist chiefly in atrophy.[5] It is therefore noteworthy that in all but patient 1 (on whom there were no sections of the small intestine) a relatively uncommon lesion was present (table 7).

Hemofuscinosis of the muscularis propria of the gastrointestinal tract was present in 2 patients (cases 7 and 31). The significance of these findings is not completely clear, but it may well be related to the "ceroid" pigment, as described by Pappenheimer and Victor[7] in animals deficient in vitamin E and in man with malabsorption syndromes. It is well known that in sprue there is malabsorption of all fat-soluble vitamins. These patients present evidence of deficiency of vitamin A (clinical changes and chemical evidence), vitamin D (osseous changes and abnormalities of calcium metabolism) and vitamin K (bleeding and hypoprothrombinemia). Hypovitaminosis E might well round out the picture. Whether some of the changes in pigmentation may be accounted for by vitamin E deficiency is conjectural at present.

The lesion in the small intestine of patient 29, consisting of villus deformities with stromal hyaline band formation and subsequent vascular distortion, has been described in greater detail elsewhere.[5] The implications of such a lesion for the disturbance in the transport of nutrients across the intestinal membrane is obvious, especially in view of its widespread character.

The hyaline lesions occur predominantly at the villus tips which are notoriously susceptible to autolysis or inadvertent trauma in the routine examination of the intestine. Therefore, the possibility exists that more cases of primary sprue handled with the necessary precautions at the postmortem table may present similar findings. In view of the relatively delicate histologic character of this lesion, it was deemed advisable to retain this case in the group of primary sprue. However, the impression is gained that such a case might be included with justification in the group of secondary sprue.

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[5] Schein, J.: Syndrome of Non-Tropical Sprue with Hitherto Undescribed Lesion of the Intestine, Gastro-Enterol. 8: 438, 1947.

[7] Pappenheimer, A. M., and Victor, J.: "Ceroid" Pigment in Human Tissues, Am. J. Path. 22: 395, 1946.

In this material there certainly seem to be no characteristic changes of the large bowel in sprue. The mesenteric lymph nodes which lie astride the absorption pathways of the small intestine deserve careful consideration. The chronic mesenteric lymphadenitis as found in patient 29 may be related to a chronic process of which the intestinal lesions were the end result. The unusual disproportionate trabeculation of the mesenteric glands in patients 31 and 35 cannot be evaluated at present. The absence of such a lesion in a preliminary control series of 40 mesenteric nodes is suggestive that these observations, whose counterpart was not found elsewhere, may have some significance in the pathogenesis in these 2 cases. This, however, must await further study.

In view of the importance of the pancreas in the digestion of fat, the results of examinations of this gland deserve comment. No apparent reason, such as cholelithiasis, could account for the various degrees of fibrosis observed. This is in contrast to the 2 instances (cases 21 and 34) of secondary sprue, in which similar lesions could be attributed to coexisting calculous cholecystitis. There was no evidence during the lifetime of either patient of any disturbance in the external pancreatic secretion in sprue.

The role of the liver has naturally been the subject of discussion in a disease so frequently associated with a macrocytic hyperchromic anemia.[1b] The centrolobular fibrosis which is the result of chronic congestive phenomena is in itself not the cause of any serious functional derangement of the liver. The hepatic necrosis (patient 29) occurred as a unique complication in a person suffering from the chronic malnutrition of sprue. Steatosis of the liver is certainly not a characteristic lesion, since it may be found in many other disease states. Its extent in patient 30 was striking. One may wonder whether the severe hypoproteinemia, present only in this case since the inception of the illness twelve years before, might not have been related to the state of the liver.

No changes of the spleen characteristic or significant for sprue were observed.

Despite the implication of the adrenals[8] and the parathyroids[9] in the causation of steatorrhea, no definitive abnormalities were observed in this material. No satisfactory explanation can be offered at the present time for the conspicuous proliferation of connective tissue in the parathyroid gland of patient 30.

The observation of erythroid hyperplasia is not surprising, since this picture is frequently seen in many anemic states. The absence of the classic megaloblastic arrest at necropsy is most probably due in these cases to the preceding specific liver therapy.

The findings in the skin, especially in regard to pigmentation, do not differ from those previously described. The coloration is due to an increase in the melanin content of the basal layers of the epidermis. Hemofuscin has thus far not been found in the skin of these patients.

The pathologic alterations in the group of secondary sprue acted in a mechanically demonstrable way to interfere with intestinal resorption. This occurred either through direct involvement of the intestinal wall or the tributary lymph channels (lymphosarcoma and intestinal lipodystrophy). It should be pointed out that mechanical obstruction to such a degree as to permit similar clinical pictures was possible in the other 2 patients (cases 21 and 34), who had no mesenteric adenopathy or gross intestinal involvement. Only histologic examination was able to reveal sufficient structural damage (amyloid deposition). The inference is justified that the gross examination should always be supplemented by a critical scrutiny of the microscopic picture, even in seemingly negative cases. To our knowledge the importance of amyloid deposition in the small intestine for the production of the sprue syndrome has not received its deserved attention.[5]

Aside from the typical cases of primary sprue which present no diagnostic difficulties, there is a group of milder or incomplete clinical instances that remain diagnostic problems. There is the group of otherwise typical primary sprue without diarrhea, in which only the high fat content of the formed normal stool will establish the diagnosis. Sprue in partial remission may similarly resemble a forme fruste of the disease by the absence of diarrhea or presence of an iron-deficiency type of anemia instead of the characteristic macrocytosis and hyperchromia. Some years ago one of us (D. A.) published observations on small intestinal hypermotility in the presence of large amounts of fatty acids and soaps in the stools[10] in the absence of characteristic hematologic changes. Such patients present themselves in the clinics complaining of vague abdominal symptoms. We were of the impression that they also may represent mild or initial instances of primary sprue. In such instances the performance of dextrose and vitamin A tolerance tests is of great confirmatory value.

The response to specific therapy in primary sprue was variable. There were instances of complete cure without a relapse for many years, both in the tropical and in the nontropical variety of primary sprue. The majority of the patients with a prolonged course required continuation of liver therapy and special diet for long periods of time. Some of the patients had to be maintained on liver therapy for as long as twelve years. In others no complete remission, at least in regard to the function of the bowel, could be achieved. And there were, finally, therapy-resistant patients, who failed to respond to large amounts of the refined as well as of the crude liver extract and, as seen in 1 instance, to folic acid.

The role of folic acid in the therapy of sprue cannot be fully evaluated at the present time. It was given orally to 6 patients in amounts of 15 to 30 mg. a day. The observed effects resembled those of liver therapy, hematologically and coprologically, and were probably not better. The relationship of folic acid to liver therapy, to the intrinsic and extrinsic factors has not been established. Although the cost of adequate folic acid therapy is at the present time excessive, the ease of its administration offers definite advantages in a chronic disease of this sort. It is as yet unknown whether this factor has to be supplied continuously or periodically. We had no opportunity to use thymine or xanthopterine in the treatment of sprue.[11]

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[8] Verzar, F., and Laszt, L.: Nebennierenrinde und Fettresorption; Biochem. Ztschr. **278:** 396, 1935.

[9] Scott, H. H.: A New Theory as to the Causation of Sprue, Tr. Roy. Soc. Trop. Med. 1923, no 8, p 16.

[10] Adlersberg, D.: Hypermotility of the Small Intestine with Impaired Fat Digestion, Rev. Gastroenterol. **4:** 28, 1937.

[11] Spies, T. D.; Vilter, C. F.; Cline, J. K., and Frommeyer, W. B.: The Substitution of Thymine for Folic Acid in the Treatment of Macrocytic Anemias in Relapse, South. Med. J. **39:** 267, 1946.

SUMMARY

1. Forty cases of the sprue syndrome are reported, which are divided into two groups comprising 36 patients with primary and 4 with secondary sprue.

2. The clinical differentiation of the two types of sprue was possible on the basis of duration of symptoms, presence of typical oral and lingual lesions, characteristic hematologic changes and response to therapy. The gastrointestinal observations were essentially similar in the two groups, as was a chemical analysis of blood, duodenal contents and feces.

3. Postmortem examination was performed in 10 cases, in 9 of which there were noteworthy findings and in 1 of which complete study was not possible.

4. The pathologic changes consisted of unique findings in intestinal villi (hyaline band formation) and mesenteric glands (disproportionate trabeculation). Amyloid involvement of the small intestine was observed in 2 instances. Abdominal lymphosarcomatosis and intestinal lipodystrophy each occurred once. Pigment deposition (hemofuscin) was encountered in 2 instances in the small intestine, and extreme steatosis of the liver was observed once. In 4 of the 6 patients whose disease was designated as primary sprue there were varying degrees of pancreatic fibrosis which were not accounted for by biliary disease. The possible relationship of the pathologic changes to sprue has been discussed.

ABSTRACT OF DISCUSSION

Dr. George Baehr, New York: Dr. Adlersberg has carefully reviewed the clinical course of sprue and has supplemented it with detailed biochemical studies not only of sprue but of the conditions that are associated with spruelike syndromes. It is important for clinicians to remember that there are variations of the clinical picture of sprue. Sprue in nontropical climates is often difficult to diagnose; in each instance one must always exclude the possibility of a pathologic lesion in the small intestinal tract. Regional ileitis, the disease described by Crohn, Guinzberg and Oppenheimer, is not infrequent. When extensive it may cause so pronounced a reduction in the absorption of fat and fat-soluble vitamins, and even of water-soluble vitamins and minerals, that a profound deficiency disease may be produced, which resembles closely the deficiency manifestations of true sprue, either the tropical or nontropical variety. Diseases of the mesenteric lymph nodes, especially lymphosarcoma of the intestine and lymph nodes, may also result in a multiple deficiency in absorption from the small bowel and induce a clinical picture which resembles, although it is not identical with, that of sprue. I am glad that Dr. Adlersberg stressed that true sprue occurs in temperate as well as tropical climates. Sprue can occur in persons who have never left the cities of this country. Doubt concerning the existence of nontropical sprue, the claim that the only true sprue is tropical, is no longer valid. Dr. Adlersberg's observations, as well as those of others, adequately demonstrate that there is typical sprue in this country, absolutely indistinguishable clinically, biochemically or pathologically from tropical sprue. Unquestionably, the disease is much commoner in tropical countries, where there are certain contributing factors, such as the greater frequency of intestinal disorders throughout childhood and adult life, which favor the appearance of this deficiency disease in certain predisposed persons. In the tropics there are also other causes for multiple vitamin and other nutritional deficiencies, such as differences in dietary habits, which must play a contributory role in precipitating the manifestations and multiple deficiencies which are called sprue, a disease characterized by a failure to absorb a variety of essential nutritional elements from the intestinal tract. Concentrated liver extract and folic acid, both of which are frequently effective in the treatment of sprue, are usually completely ineffective in the spruelike clinical picture accompanying organic diseases of the small intestines or of the mesenteric lymph nodes. Unfortunately, this is not a reliable differentiating criterion. There are cases of true sprue, tropical and nontropical, which do not respond completely to therapy with folic acid or with concentrated liver extract and will respond to a crude liver extract. There is something in crude liver extract which in some instances is better than either the more concentrated preparation or even folic acid.

Dr. Daniel M. Silverman, New Orleans: In 1924 I called attention to the endemicity of sprue in and about New Orleans in studies which included for the first time the analysis of pancreatic enzymatic concentrate of the duodenal contents in cases of sprue. Prior to that, Brown of Johns Hopkins had made such studies by analysis of the stool. He thought that in the stool examinations there was a deficiency of pancreatic enzymatic activity, but my studies of duodenal contents made with and by the epinephrine method showed what Dr. Adlersberg reported today, that those enzymes were normal. Unlike the case in pernicious anemia, I found that the gastric contents showed hydrochloric acid. These cases of sprue which originated in Louisiana did not differ from the true sprue which is imported, particularly from China and the Philippine Islands. The point brought out by Drs. Adlersberg and Schein that concomitant diseases may present the picture resembling that of sprue is well made in the light of my work in the South with the dysenteries. Like pellagra, sprue is associated not infrequently with Bacterium dysenteriae infection. As Dr. Adlersberg in pellagra syndrome found the strain of B. dysenteriae, so also in pellagra, in true sprues and in studies in recent years there have been found the so-called pathognomonic small intestine, mucosal pattern of sprue; namely, the segmentation and flocculation of barium in the small intestine is not always pathognomonic or characteristic of sprue. Colburn found it in cases of hyperproteinemia, primary and secondary deficiency disorders. It is not infrequently found in chronic infections due to Salmonella and B. dysenteriae. With reference to treatment, results of modern methods are better than were some of those used twenty-five years ago. With infections due to the Salmonella, much lemon juice and large doses of meat, which patients had not been accustomed to eating, were given.

Dr. J. E. Gossard, Sierra Madre, Calif.: I have 5 patients with sprue now under my care, so I am grateful to Drs. Adlersberg and Schein, especially for the pathologic demonstrations. One should also thank Dr. B. K. Ashford for studies which, although made years ago, were effective in the treatment of sprue. They may be found outlined in Tice's Practice of Medicine, volume 4, page 190—"no less than a pound of meat per day is recommended." It now seems that general practitioners everywhere should be warned to keep a sharp lookout for the disease. Any chronic peasoup diarrhea with macrocytes in the blood should be further studied. Achlorhydria and a peculiar typical tongue may or may not come into the clinical picture early.

Dr. David Adlersberg, New York: In regard to therapy of sprue, many patients responded more satisfactorily to crude than to refined liver extracts. Some of them were cured by a single course of specific therapy and never relapsed, while others required, almost like persons with pernicious anemia, continuous therapy over many years. The so-called deficiency pattern of the small intestine is not specific but is characteristic of sprue. I think this is the best way to say it: A similar pattern may be found on roentgen examination of the small intestine in hypoproteinemia or allergic shock or may be produced by the administration of morphine or by the addition of oil to the barium suspension. Despite all these limitations, the "deficiency pattern" is still characteristic of sprue. There are many forms or types of sprue that present difficult diagnostic problems and remain undiagnosed. They may resemble that seen in the typical sprue patient who under therapy went into a partial or incomplete remission, who may then show practically normal blood values and normal looking bowel movements, but with an excessively high fat content of the latter (40 to 50 per cent of the dried fecal material). The sprue of the average patient remains undiagnosed for many months. It is especially for the diagnosis of the atypical and mild cases of the disease that the laboratory tests are of great diagnostic help, especially the "flat" vitamin A tolerance test, the "flat" dextrose tolerance test and the quantitative determination of the fecal fat content, as well as the fecal fat partition.

THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT

A Consideration of the Theory of Hunger and Appetite

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It is generally agreed that the administration of amphetamine ("benzedrine") facilitates the reduction of weight. This effect of the drug was first reported in 1937, when patients receiving amphetamine for other purposes were observed to lose weight.[1] Since that time a number of papers have appeared in which the drug has been reported to be of value in the management of obesity.[2] However, it has not been demonstrated by controlled experiments that the drug actually causes a reduction of body weight.

The mechanism by which the drug apparently facilitates the loss of weight has not been settled. All the possible mechanisms have been suggested in the literature and are summarized in the following outline.

The drug acts to facilitate the loss of weight:

- A. By increasing the expenditure of energy
  - (*a*) by increasing the basal metabolism as does dinitrophenol or
  - (*b*) by increasing muscular activity by causing restlessness
- B. By tending to induce negative water balance by promoting diuresis or reducing the intake of water
- C. By causing incomplete digestion or absorption of food
  - (*a*) by decreasing motility or
  - (*b*) by decreasing secretion
- D. By reducing the ingestion of food
  - (*a*) by decreasing the tone and motility of the empty or fasting stomach or
  - (*b*) by decreasing the desire or appetite for food.

DATA IN THE LITERATURE

Results reported in the literature indicate that a dose of from 10 to 40 mg. of amphetamine sulfate increases the basal oxygen consumption of man from 0 to 15 per cent depending on the dose and the individual. The increase lasts up to nine hours but not as long as twelve to twenty-four hours.[3] In human subjects it has not been quantitatively determined whether the increased metabolism, when it occurs, is due to physical activity (restlessness) or to an increase in general cellular oxidation. The consensus is that it is due to restlessness. In rats it has been shown definitely that the drug increases spontaneous physical activity[4] and that this effect diminishes on repeated administration.[4b]

Diuresis has been suggested as the cause of a portion of the loss of weight associated with the administration of amphetamine.[5] Both diuretic and antidiuretic effects have been reported.[6] In anesthetized dogs only the first dose has been found to cause some diuresis; the failure of repeated doses to cause diuresis has been explained as due to a disappearance of the pressor effect of the drug.[7]

Doses of the drug which in rats cause an increase in spontaneous activity do not cause a wastage of food in the feces.[4b] Though doses of 5 to 30 mg. in man may inhibit gastric motility and slow the rate of gastric evacuation[8] and increase slightly gastric secretion,[8b] there is no evidence to show that such effects influence the digestion and absorption of food. The factor of safety in digestion and absorption is large.

No reports in the literature have presented objective data substantiating the impression that amphetamine decreases dietary intake. Likewise, we have found no experiment which has proved that amphetamine itself will cause a loss of weight.

REPORT ON EXPERIMENTS

EXPERIMENT 1 A.—*Does amphetamine sulfate decrease food intake and body weight in human subjects?*

Methods.—Seven obese and two nonobese volunteer subjects were fed three meals a day for two eight week periods separated by a four week vacation. The subjects were permitted to eat only food provided by our kitchen, although they could eat as much or as little of any item as they desired. The amount of each item that each person ate at each meal was recorded. To minimize monotony, three different menus were used and the same menu was presented every fourth day. The only difference between the two eight week periods was that sandwiches before retiring were provided when desired during the second period.

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The first day of each week each subject was weighed before breakfast, stripped and after voiding.

During the first two weeks of each period no medicament was given. During the second two weeks each subject was given a placebo capsule to take one hour before each meal. During the first period all 7 obese subjects were given 5 mg. of *d*-amphetamine sulfate ("dexedrine") one hour before each meal in the fifth and sixth weeks, and the dose was raised to 7.5 mg. during the seventh and last week for 4 of these 7. Placebos were given to the nonobese subjects during the third to sixth weeks. They then received 5 mg. of *d*-amphetamine sulfate before each meal during the last two weeks of this first period.

TABLE 1.—*Average Daily Voluntary Food Intake in Calories on Indicated Dose of Amphetamine Sulfate Three Times a Day Before Meals*

First Eight Week Human Diet Experiment

Subject	Control 4 Wks.	Control 6 Wks.	Rx d 5 Mg. 2 Wks.	Rx d 5 Mg. 4 Wks.	Rx d 7.5 Mg. 2 Wks.
G. L.	1,550	.....	1,561	.....	1,269
R. W.	3,501	.....	3,215	.....	3,100
J. K.	3,142	.....	2,062	.....	2,250
H. F.	2,806	.....	2,472	.....	2,180
A. L.	1,696	.....	1,764	1,617	.....
M. G.	2,587	.....	2,371	2,073	.....
S. T.	2,965	.....	2,828	2,811	.....
Average	2,615	.....	2,325	2,167	2,250
H. S.	.....	2,860	2,721		
M. A.	.....	2,175	1,475		

Second Eight Week Human Diet Experiment

Subject	Isomer	Control 4 Wks.	Control 5 Wks.	Rx 10 Mg. dl or 5 Mg. d 3 Wks.	Rx 5 Mg. d 4 Wks.	Rx 15 Mg. dl or 7.5 Mg. d 1 Wk.
A. L.	d	2,035	.....	1,563	.....	1,348
M. G.	d	3,038	.....	2,000	.....	1,630
S. T.	d	2,501	.....	2,257	.....	2,475
G. L.	dl	1,677	.....	1,859	.....	1,457
J. K.	dl	3,069	.....	2,612	.....	2,448
H. F.	d	3,046	.....	2,688	2,715	.....
Average............		2,579		2,111		1,871
O. W.	d	.....	3,338	2,451*	.....	3,310
H. S.	dl	.....	2,767	2,435*	.....	2,482

* Two weeks.

In the second period 2 of the 6 obese[9] subjects received 10 mg. of *dl*-amphetamine sulfate before each meal through the fifth, sixth and seventh weeks and 15 mg. during the last week. The other 4 received 5 mg. of *d*-amphetamine sulfate before each meal over the same period of time, and all but 1 had each dose raised to 7.5 mg. the last week. One nonobese subject received 10 mg. of *dl*-amphetamine sulfate and the other 5 mg. of *d*-amphetamine sulfate before each meal during weeks six and seven and 15 mg. of *dl*-amphetamine sulfate and 7.5 mg. of *d*-amphetamine sulfate, respectively, during the last week.

Results.—The data on the caloric intake and body weight of the subjects are presented in tables 1 and 2. These data when averaged for the group are presented graphically in chart 1.

It is to be noted from chart 1 and table 2 that the obese subjects lost weight when placed on a diet which allowed them to eat all they wanted three times a day and nothing between meals. Part of this may have been due to a desire on the part of 3 of them to lose some weight. They also lost weight during the experiment of the second eight weeks, in which they were allowed to eat before retiring, if they desired.

Placebo capsules had no effect on the average rate of weight loss, but the amphetamine definitely decreased the intake of food and increased the rate of weight loss.

It is to be noted that during the vacation period of four weeks, 5 of the 6 subjects regained some of the weight which they had lost. The 1 subject (G. L.) who was determined to lose weight lost 1.5 pounds (0.7 Kg.) during the four weeks vacation but not as much as during the periods of amphetamine administration.

EXPERIMENT 1 B.—*Does amphetamine sulfate decrease food intake and body weight in canine subjects?*

If amphetamine sulfate should decrease the intake of food in canine as well as in human subjects then it would be possible to investigate experimentally the site of action of the drug.

Methods.—Eight dogs were permitted to eat as much food as they desired during a single forty-five minute period each day. The meals were always the same in character, and the animals were fed and cared for by the same few persons throughout the year of experiments. The quantity of food eaten by each animal each day was carefully weighed and recorded. The animals were weighed every five to seven days. When a medicament was administered it was injected by the subcutaneous route one hour prior to feeding. Isotonic solution of sodium chloride was used for control injections.

Results.—The results are shown in table 3.

It is evident that if 2.5 to 20 mg. of *d*-amphetamine sulfate are given, hypodermically to a dog one hour before the presentation of a meal the intake of food is decidedly decreased. A dose of 10 to 20 mg. was required to abolish practically all food intake for a period of two weeks. One dog, not shown in table 3, was injected with 10 mg. of the drug one hour before the presentation of food daily for twenty-eight days, during which period the animal ate a total of only 150 Gm. of food. Dog 4 (table 3) ate only 50 Gm. of food during the first ten days when it was injected with 5 mg. of the drug; another ate nothing for twenty-one days. Dog 8 ate nothing for eighteen of the thirty days when it received 5 mg. of *d*-amphetamine sulfate and ate only 10 per cent of its normal intake during the entire thirty day period, during which it lost 26 per cent of its original body weight.

TABLE 2.—*Body Weight (Pounds) at Start of Each Week*

First Eight Weeks' Experiment

	1	2	3	4	5	6	7	8	9
G. L.	155.75	155.75	154.50	153.00	151.75	149.75*	148.50	144.75†	145.00
A. L.	179.25	174.00	173.00	170.00	170.00	168.50*	166.00	165.00	161.25
M. G.	183.00	180.50	181.25	181.00	180.25	177.25*	175.25	173.00	174.50
R. W.	188 00	188.00	186.00	188.50	189.50	187.00*	186.75	186.25†	184.75
J. K.	155.75	156.00	156.00	154.50	156.00	153.75*	153.25	149.75†	149.00
H. F.	191.75	188.00	186.75	185.75	184.25	180.50*	180.25	177.00†	176.00
S. T.	215.25	212.25	212.00	212.25	213.50	210.75*	209.00	207.00	206.75
Average	180.80	179.20	178.50	177.80	177.80	175.30*	174.10	171.60†	171.00
H. S.	149.75	148.75	150.00	149.50	150.00	150.00	149.50	148.00*	147.50
M. A.	121.50	121.50	120.75	121.75	121.75	121.75	120.50	120.00*	117.75
Average	136.60	135.10	135.40	135.60	135.90	135.90	135.10	134.00*	132.60

Second Eight Weeks' Experiment

	1	2	3	4	5	6	7	8	9
G. L.	143.50	143.50	140.50	140.50	141.00	139.00*	139.00	137.50	136.50†
A. L.	165.75	164.75	164.00	164.00	163.50	159.50*	159.50	157.00	157.50†
M. G.	178.00	176.75	178.00	179.75	178.50	174.75*	173.50	172.50	167.00†
J. K.	158.50	157.50	156.00	156.00	155.25	153.00*	154.00	153.50	153.25†
H. F.	185.25	182.25	180.75	179.00	178.50	174.25*	173.50	172.00	171.75
S. T.	211.00	211.00	209.50	208.50	207.00	205.00*	204.00	205.50	203.50†
Average	173.50	172.60	171.40	171.20	170.60	167.50*	167.20	166.30	164.90
H. S.	147.00	149.50	148.00	149.50	148.00	147.50	145.00*	145.00	143.00†
C. W.	150.75	151.00	151.00	154.00	152.25	154.50	154.00*	152.50	150.50†
Average	148.80	150.25	148.50	151.80	150.10	151.00	149.50*	148.80	146 80†

* First week of medication.
† Increased dose.

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[9] One subject withdrew from the experiment at the end of the first period.

Other points established during this experiment will be mentioned. First, when the administration of the drug was discontinued and isotonic solution of sodium chloride was injected instead, the animal ate voraciously. There was no evidence of conditioning to the injection. Second, when a dose of the drug which caused only about a 50 per cent reduction in the intake of food was given daily, the drug became less and less effective. This may have been due to the development of tolerance to the anorexic effect of the drug or to the accumulating dietary deficit. Third, the animals even when injected with relatively large doses of the drug continued to manifest interest in being fed. They were always fed in the same order and displayed the same jealousy when the dog ahead was being fed. They maintained interest until the pan of food was placed in the cage, after which they would smell it and turn in a circle; look at it and turn again, and then lie down or watch the person who fed them complete his work. The animals failed to manifest any behavior suggesting dependence on or craving for the drug. Only 1 animal started out by resisting the injections and continued to do so.

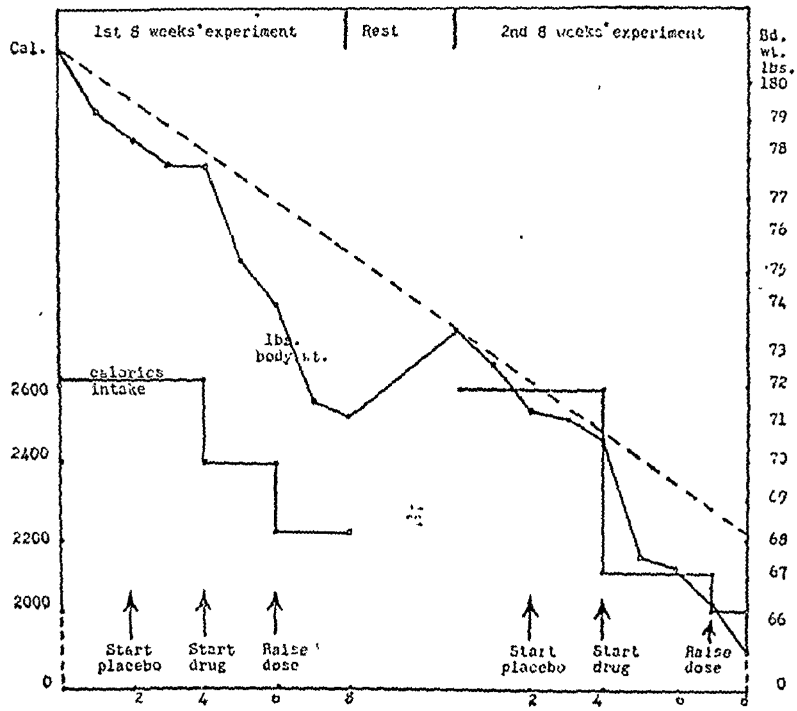

Chart 1.—Obese subjects on ad libitum diet.

Experiment 2.—*Does amphetamine sulfate cause a loss of weight in human subjects when the caloric intake is maintained regardless of anorexia?*

It was believed that if amphetamine sulfate caused a loss of weight by some mechanism other than by decreasing the intake of food this could be demonstrated by placing subjects on a constant diet and having them eat all the food presented, even though they did not desire it after taking the medicament.

Methods.—Ten volunteer medical students of normal weight were obliged to eat 3,000 calories at the three meals served to them each day for fourteen consecutive weeks. The diet was well balanced, and except for meat, potatoes and dairy products items of the diet came from canned foods. Each item of canned food was always from the same pack, in order to insure against changes in caloric, vitamin or mineral content of the menu. These men lived together in a dormitory and were weighed immediately after arising and voiding, every fourth morning. Placebos were given before each meal during the third and fourth weeks. From the fifth week, subjects 1 to 5 received 10 mg. of *dl*-amphetamine and subjects 6 to 10 received 5 mg. of *d*-amphetamine before each meal, every day until the thirteenth week (fifty-six days), when placebos were again given until the end of the experiment.

Results.—The body weight of each subject at each weighing is shown in table 4. In the last column of table 4 is shown the average weight of the group for eight day periods, excluding subject 6 who was sick for two weeks. The significance of the rate of loss of weight before, during and after the period of amphetamine becomes apparent on the inspection of chart 2.

It is to be noted that a loss of weight occurred during the twenty-six day control period. Evidently the 3,000 calories allowed each subject was inadequate to maintain the body weight of the group; in fact, it was adequate for the maintenance of body weight in only 3 of the 10 subjects. The group lost an average of 0.7 pound (0.3 Kg.) during the twenty-six days of control, which is at a rate of approximately 0.03 pound (0.01 Kg.) per day. Then, on taking amphetamine, the loss of weight became precipitous, 1 pound (0.5 Kg.) being lost in a week. After this, however, only ½ pound (0.23 Kg.) was lost in forty-eight hours.

It is to noted also that 3 of the 10 subjects (1, 4 and 10) did not lose any weight during the control period, which shows that the allowance of 3,000 calories was adequate. One of the 3 (subject 10) did not manifest a significant decrease in body weight when amphetamine was given, while the others (subjects 1 and 4) did.

These observations show that in some persons a dose of 5 mg. of *d*-amphetamine sulfate or 10 mg. of *dl*-amphetamine sulfate does not have a sufficient effect on total energy metabolism or other mechanisms to cause a loss of body weight when the caloric intake is constant. In other persons these doses of the drug are adequate to increase the total energy metabolism or total loss of water by the body enough to cause a temporary increase in the rate of weight loss. The fact that the acceleration of weight loss due to the drug is temporary indicates that a tolerance results. This is also characteristic of the results of the preceding experiments.

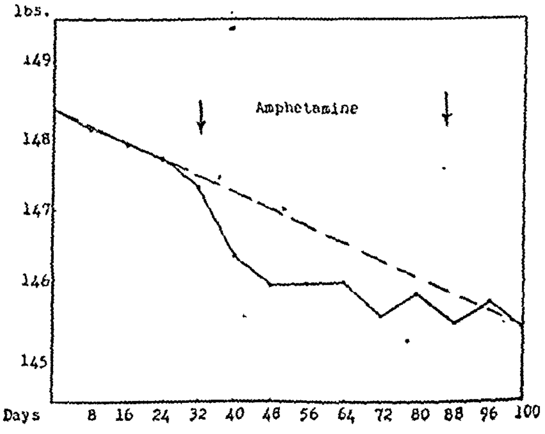

Chart 2.—Rate of loss of weight before, during and after the administration of amphetamine.

This experiment has clearly shown that amphetamine-induced loss of weight is almost entirely due to anorexia.

As little as a 10 per cent increase in general metabolism can account for the extra weight lost during the first few days of medication. This explanation is particularly feasible because some degree of wakefulness was reported by all but the 2 subjects (1 and 10) who lost least on medication. Obviously, if sleeplessness occurs and restlessness prevails, a 10 per cent increase in the utilization of energy is entirely possible. It must also be reported that by coincidence the final examination period coincided with the first week of medication. That this might be significant is suggested by the fact that subjects 1 and 10 were upperclassmen and had only a few examinations to take.

The total daily urinary output of each of these subjects was collected for the purpose of studying the metabolism of the drug.[10] The results showed no increase in urinary output during the first four to eight days of medication.

Table 3.—*Summary of the Various Experimental Regimens*

The effect of d-Amphetamine Sulfate on Voluntary Food Intake and Ultimate Weight (prior to Surgery)

Dog	Dose, Mg.	Length of Period, Days	Average Daily Food Intake, Gm.	Body Weight at End of Period: Kg.	Change, Kg.	Change,* %
1	..	0	.....	17.00		
	0	29	545.0	18.60	1.60	9.4
	2.5	20	512.0	19.50	0.90	4.8
	0	5	636.7	18.80		
	10	18	378.6	17.60	—1.20	— 6.4
	15	11	327.7	17.35	—0.25	— 1.4
	20	22	195.6	14.80	—2.55	—17.2
	0	35	676.7	17.90	3.10	17.3
	20	15	21.5	15.60	—2.30	—12.8
	0	30	688.0	18.40	2.80	17.9
2	..	0	.....	9.80		
	0	38	355.0	12.00	2.20	22.4
	2.5	20	175.2	10.90	—1.10	— 9.1
	0	44	307.9	13.60	2.70	24.7
	5	20	23.7	10.10	—3.50	—25.7
	0	25	287.8	12.15	2.05	20.2
3	..	0	.....	15.20		
	0	37	400.0	16.10	0.90	5.9
	2.5	21	310.2	16.10	0	0
	3	34	285.6	15.65	—0.45	— 2.7
	10	32	53.2	11.30	—4.30	—27.4
	0	50	645.4	17.40	6.10	53.9
	10	15	49.2	14.40	—3.00	—17.2
	0	46	633.0	19.90	5.50	38.1
4	..	0	.....	14.80		
	0	37	370.0	15.10	0.30	2.0
	2.5	21	340.0	15.70	0.60	3.9
	5	33	242.5	15.10	—0.60	— 3.8
	10	32	180.4	13.50	—1.60	—10.5
	0	34	471.3	16.20	2.70	20.0
	15	15	34.6	13.55	—2.65	—16.3
	0	28	587.8	16.50	2.95	21.7
5	..	0	.....	11.30		
	0	42	285.0	12.20	0.90	7.9
	5	31	91.3	9.70	—2.50	—20.4
	0	30	411.2	12.15	2.45	25.2
	7.5	14	19.6	10.00	—2.15	—17.6
	0	47	357.3	12.40	2.40	24.0
6	..	0	.....	14.20		
	0	43	283.0	14.35	0.50	3.4
	5	11	120.3	13.40	—0.95	— 6.6
	10	27	103.5	10.60	—2.80	—20.8
	0	23	498.0	13.00	2.40	22.6
	10	14	53.9	11.15	—1.85	—14.2
	0	47	418.3	13.85	2.70	24.2
7	..	0	.....	18.15		
	0	42	480.0	19.35	1.20	6.6
	5	11	170.5	17.75	—1.60	— 8.2
	10	27	30.9	13.50	—4.25	—23.9
	0	23	671.3	18.10	4.60	34.1
	10	14	8.2	14.65	—3.45	—19.0
	0	47	618.1	19.25	4.60	31.3
8	..	0	.....	12.55		
	0	42	330.0	12.65	0.10	0.8
	5	30	29.6	9.30	—3.35	—26.4
	0	41	316.8	11.55	2.25	24.1
	5	13	34.6	9.75	—1.80	—15.5
	0	31	378.0	11.55	1.80	18.5

* Calculated as the difference between the weight at the end of the period and the weight at the beginning, divided by the weight at the beginning of the period.

Table 4.—*Table of Body Weights in Pounds (Constant Food Intake)*

Date	Subject: 1	2	3	4	5	6	7	8	9	10	Average	Average 8 Days
1/17	137.50	149.50	157.00	142.50	161.50	156.50	147.00	147.50	145.00	148.00	148.4	
1/21	137.00	148.75	154.25	142.75	161.25	155.00	146.50	147.50	145.50	148.25	147.9	148.15
1/25	137.50	149.50	154.00	142.50	159.50	156.50	146.75	146.75	146.25	149.50	148.0	
1/29	136.75	148.75	154.50	143.00	159.75	155.00	147.00	147.75	145.00	148.50	147.9	147.95
2/ 2	136.75	147.75	154.00	142.50	159.25	155.00	147.00	147.75	144.50	148.00	147.4	
2/ 6	139.00	148.75	154.25	143.00	159.25	153.50	147.00	148.50	145.00	149.50	148.1	147.75
2/10	137.75	146.50	152.50	142.00	159.25	152.25	147.00	148.50	144.25	146.75	147.1	
2/12	139.50	147.75	154.25	143.00	159.25	151.75	145.00	147.25	143.75	149.50	147.6	147.35
Period of Medication 2/16 to 4/9												
2/16	138.50	146.00	152.50	140.00	158.25	150.00	144.50	145.50	143.50	148.25	146.3	
2/20	138.20	146.50	152.75	140.25	158.00	149.25	145.00	146.00	143.00	149.50	146.6	146.45
2/24	138.20	145.50	151.25	140.75	157.00	149.00	145.00	144.50	143.00	147.75	145.9	
2/28	138.00	146.25	152.25	140.75	156.75	148.75	145.00	145.50	143.25	148.75	146.2	146.05
3/ 4	137.50	145.25	151.75	141.25	157.50	......	144.50	144.75	142.75	148.00	146.0	
3/ 8	137.50	146.50	151.50	140.75	156.75	......	144.00	145.50	143.50	149.25	146.1	146.05
3/12	137.50	146.00	153.00	140.75	157.00	150.25	144.00	145.25	143.25	149.75	146.2	
3/16	138.00	145.50	152.50	140.75	157.00	149.25	144.00	145.20	142.00	149.50	146.0	146.10
3/20	137.00	146.25	151.00	139.75	156.50	147.75	144.00	145.50	141.50	148.50	145.6	
3/24	137.50	145.00	151.00	141.00	157.25	148.00	144.00	145.50	142.50	148.25	145.7	145.65
3/28	137.50	145.50	150.00	140.00	157.00	148.25	144.50	145.50	143.50	150.00	146.0	
4/ 1	137.50	143.75	153.00	140.00	157.25	148.00	144.00	146.00	142.75	148.50	145.9	145.95
4/ 5	137.50	144.00	151.50	139.75	156.75	147.75	144.00	145.00	143.00	147.50	145.3	
4/ 9	137.50	143.50	152.50	141.00	157.00	147.50	145.00	145.00	143.25	147.75	145.8	145.55
4/13	137.50	144.25	153.75	140.50	157.00	146.25	144.00	146.50	142.50	148.25	146.0	
4/17	138.00	144.50	153.00	139.00	157.50	146.75	142.50	145.00	143.00	149.00	145.7	145.85
4/21	138.00	144.00	153.50	139.00	156.25	147.25	143.50	145.00	142.50	148.50	145.5	145.50

The averages exclude the record of subject 6, who was sick most of the time.

Experiment 3.—*Does amphetamine cause anorexia in dogs when the stomach and upper part of the intestine are extrinsically denervated?*

In the previous experiment it has been found that the chief cause of weight loss when amphetamine is given is a decrease in the desire for food. This might be due to a decrease in

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10. Harris S. C.; Searle, L. M., and Ivy, A. C.: J. Pharmacol. & Exper. Therap. 89: 92, 1947.

gastric hunger tone and motility. To examine this question the stomach and upper part of the intestine were denervated.

Method.—Four of the same dogs used in the previous experiment were subjected to a supradiaphragmatic bilateral vagotomy and later to bilateral splanchnolumbar sympathectomy verified by autopsy.

TABLE 5.—*Canine Anorexia Studies After Neuronectomy*

Dog	Surgery	Medication: Dose, Mg.d	Medication: Duration, Days	Average Daily Food Intake, Gm.	Body Weight at End of Period, Kg.
1		0	30	688.8	18.40
	Splanch.				
		0	15	643.3	
	Splanch. *				
		0	6	611.0	17.50
		20	10	0	15.33
		0	13	659.6	17.95
	Vagot.				
		0	15	548.6	17.05
		20	13	5 3	14.90
		0	41	541.2	18.15
2		0	25	387.8	12.15
	Vagot.				
		0	25	408.2	12.50
		5	14	29.2	10.53
		0	10	576.0	11.95
	Splanch.				
		0	11	481.0	12.40
		5	13	25.7	10.20
		0	76	357.7	13.80
3		0	46	638 0	19.70
	Vagot.				
		0	25	593.5	19.90
	Splanch.				
		0	64	527.0	19.75
4		0	28	587.8	16.50
	Vagot.				
		0	10	473.0	16.35
		15	10	5.0	14.00
		0	40	386 6	16.30
	Splanch,				
		0	52	402.1	16.55

The effect of the operation on the intake of food was followed, and then the effect of the drug was determined.

Results.—The results are summarized in table 5.

Comparison of the results in table 5 with those in table 3 shows that the anorexia produced by amphetamine is not interfered with by the interruption of sensory nerves from the stomach and intestines. It is also noteworthy that the eating behavior of these animals was the same after as before surgical intervention even when no medicament was administered.

EXPERIMENT 4.—*Does the rather prolonged administration of amphetamine cause any evidence of disturbance of tissue functions in human subjects?*

Since we were planning to give amphetamine over a period of several weeks, it was decided to ascertain if changes in various functional activities might be detected.

Methods.—Blood Studies: Each Monday morning before breakfast, during the first experiment of eight weeks (with food ad libitum) on human subjects, a sample of venous blood was withdrawn from each subject. Red, white and differential counts were made on this blood, and the hemoglobin concentration and blood sugar levels were determined. The method of Sahli was utilized for the hemoglobin test, and the technic of Somogyi was employed for evaluation of the blood sugar level.

Cardiovascular Studies: At the time when blood was withdrawn for the previous tests the systolic and diastolic blood pressures and the pulse rates were determined after the subject had spent at least five minutes in the reclining position.

Kidney Function Tests: Each Monday morning the first urine specimen of the day was brought to the laboratory to be tested for albumin by the nitric acid test and for sugar by the qualitative method of Benedict.

Additional Tests: A sugar tolerance test was performed on the subjects of human experiment 1A, at the beginning of the experiment and at the end of the twenty-eight days of medication. Each subject was given by mouth 1 Gm. of dextrose per kilogram of body weight immediately after a sample of blood was drawn. Samples of venous blood were again drawn thirty, sixty and one hundred and five minutes after the ingestion of the sugar, and all samples were analyzed for dextrose by the method of Somogyi.

The blood serum phosphatase concentration was determined by the method of Bodansky (1) after twenty-six days of medication on the subjects of the first eight week experiment and (2) both before and after fifty-five days of medication during the human experiment 2.

The blood ascorbic acid level of the subjects of the third human experiment was determined twice by Roe's method before medication was begun and after the second and the sixteenth day of medication.

For a rough estimation of total alimentary passage time, three size 00 capsules containing carmine powder were given to each subject during human experiments 1A and 2 just before supper. The time of first appearance and disappearance was noted. This was done twice before medication was begun in experiment 1A and 2, and after nine days of medication in experiment 1A and forty-eight days of medication in experiment 2.

During experiment 2 each of the 10 subjects collected his entire urinary output for all but the first seven days of the experiment. Each daily sample was started after the first morning sample and concluded after the next morning sample. The specimens of urine were kept in bottles, to each of which had previously been added 5 cc. of glacial acetic acid. When the specimens were brought into the laboratory the volume was recorded and two 25 cc. aliquots were taken. One aliquot was frozen and stored for reference, and the other was assayed for its amine content. The assay technic was a combination of certain features of the methods of Beyer and Skinner, Richter, Jacobsen and Gad. The method is presented elsewhere.[10]

Results: The results of several of the tests which we performed on our subjects confirmed studies already reported. These, all of which showed no change, were: red and white blood cell counts, hemoglobin determinations, fasting blood sugar levels, sugar tolerance curves and urinary sugar and albumin tests.

TABLE 6.—*Effect of Amphetamine on Laboratory Data*

Serum Phosphatase as Determined in Bodansky Units

Experiment 1A		Experiment 2		
Subject	*Drug 20 Days*	*Subject*	*Drug 0*	*Drug 55 Days*
G. L.	1.9	1	2.0	2.3
M. G	2.5	2	2.1	2.4
J. K.	2.6	3	2.4	2.6
H. F	3.6	4	3.2	2.9
S. T.	1.9	5	2.9	3.1
H. S.	1.8	6	2.4	2.9
C. W.	2.4	7	4.7	6.1
		8	2.1	2.3
		9	3.1	4.1
		10	2.7	3.2
		Average....	2.5*	2.8*

Blood Ascorbic Acid, Mg./100 Cc.

Subject	*Drug 0*	*Drug 0*	Drug 0 *Average*	Drug *2 Days*	Drug *16 Days*
1	0.95	....	0.95	1.00	0.91
2	1.24	1.45	1.34	1.23	1.35
3	1.12	0.96	1.04	0.90	1.07
4	0.84	1.05	0.94	....	1.13
5	0.55	1.03	0.79	0.93	1.00
6	1.01	1.27	1.14	0.95	1.41
7	0.87	1.13	1.00	1.13	1.13
8	0.89	....	0.89	1.04	0.87
9	1.07	1.47	1.27	1.05	1.10
10	0.94	0.86	0.90	0.95	0.87
	0.948		Aver. 1.03	1.02	1.08

* Excluding subject 7.

The results of studies which have not been reported heretofore on subjects receiving amphetamine sulfate were: the blood ascorbic acid levels, which were not altered[4] (table 6). The blood serum phosphatase was not altered (table 6). The results of the studies on total alimentary passage time (table 7) show that it was not altered by the drug. The metabolism of the drug, probably by the liver, was not altered.[4] The blood pressure was not changed.

No evidence of toxicity of the drug as employed in these studies was found. This was anticipated in view of the relatively low toxicity of amphetamine.

Experiment 5.—*Does amphetamine cause anorexia in human patients with bulimia after frontal lobotomy?*

With the idea in mind that amphetamine might decrease dietary intake by acting on the frontal lobe, the drug was given to 6 patients who had developed bulimia subsequent to a frontal lobotomy.

Methods.—Six patients were studied, through the cooperation of Dr. E. Liebert. Each patient was given 10 mg. of *d*-amphetamine sulfate subcutaneously one hour prior to lunch and supper on two successive days. We consider this dose to be relatively large for the human subject. The dining room attendant was asked to record whether the patients ate the usual amount or less.

Table 7.—*Carmine Clearance Tests*

Hours from Ingestion to Appearance and Disappearance of Carmine in Stool

Human Experiment 1A

	Appearance in Hrs.			Disappearance in Hrs.		
Subject	Drug 0	Drug 0	Drug 0 Days	Drug 0	Drug 0	Drug 0 Days
G. L.	15.25	13.50	14.0	43.25	..	96
A. L.	13.50	14.00	14.0	.....	..	..
M. G.	26.00	20.50	24.0	44.00	..	72
R. W.	24.00	14.00	14.0	62.00	..	60
J. K.	16.50	14.00	14.0	61.50	60	45
H. F.	15.00	16.00	14.0	45.00	25	48
S. T.	13.00	16.00	24.0	24.00	..	30
H. S.	14.00	14.00	14.0	.....	..	72
M. A.	14.50	14.25	14.0	69.00	..	72
Average	16.80	15.20	16.2			

Human Experiment 2

	Appearance in Hrs.			Disappearance in Hrs.		
Subject	Drug 0	Drug 0	Drug 48 Days	Drug 0	Drug 0	Drug 48 Days
1	13.5	21.0	16.0	48.0	36.0	37.5
2	24.5	13.0	28.0	48.5	42.0	24.5
3	20.0	22.5	18.5	47.0	40.0	23.5
4	30.0	18.0	37.0	49.0	49.0	37.0
5	30.0	25.5	50.5	66.5	58.0	75.5
6	25.0	44.5	26.0	68.0	92.0	65.0
7	25.0	26.0	42.0	45.5	49.0	61.0
8	25.0	18.0	18.0	40.0	49.5	49.0
9	21.5	....	....	24.0	....	....
10	20.3	16.0	15.0	26.0	50.5	49.0
Average	23.9	23.2	27.9	48.7	51.8	46.6

Results.—During the first day of the experiment none of the patients ate less. During the second day, 1 patient ate less at lunch and 2 less at supper.

The results indicate to us that the patient with a frontal lobotomy is less susceptible to the anorexic effect of amphetamine than is a normal person. Because of the lack of adequate quantitative control data, the results are mentioned solely for their provocative value.

COMMENT

The data show clearly that the administration of amphetamine sulfate can cause in man and dog a loss of body weight which is associated with a reduction of voluntary food intake. When the caloric deficit which results from the decrease in dietary intake is calculated over a period of from two to four weeks, it is found that the loss of body weight is accounted for by the decrease in food taken. (We allow 7.7 calories per gram of weight lost.[11]) However, both collectively and individually more weight was lost by some subjects during the first week than could be accounted for by the caloric deficit due to a decreased intake of food. This extra loss of weight could not be ascribed to diuresis, since the increase in urinary output was not significant.[10] Neither could it be ascribed to an increase in the basal metabolic rate, which was not changed. However, the total metabolism during the period of drug action could be increased while the basal metabolic rate remains normal. An increase of 10 to 20 per cent in total energy metabolism or an extra loss of 100 cc. of urine or body water a day for a few days or some combination of these two factors would balance the energy-body weight account. Substantiation of these interpretations is found in the failure of 10 men of normal weight on a constant caloric intake to lose any appreciable amount of weight during fifty-six days on a dosage of 10 mg. of racemic amphetamine sulfate or 5 mg. of *d*-amphetamine sulfate before each meal. Again in this experiment the greatest individual (3 pounds, or 1.4 Kg.) and average (1.4 pounds, or 0.6 Kg.) loss of weight occurred during the first four days of medication, a quantity which could be accounted for by a modest increase (average 9.2 per cent) in total energy metabolism and body water output.

It is conceivable that this drug may cause anorexia by initiating some type of intoxication. We failed to find that any evidence of chronic toxicity of therapeutic doses of the drug was revealed by tests directed to evaluate the function of the liver, bone marrow and kidney. It is also significant in this connection that these observations confirm the reports in the literature. The appetite immediately returns to normal after the dosage of the drug is discontinued. It is also conceivable that amphetamine acts on the liver, adrenals or some other tissue to cause the production of an unknown substance, which in turn acts on the brain. This possibility seems remote, however. It was thought for several reasons that amphetamine might induce anorexia by affecing the frontal lobes of the brain.

Since the loss of weight observed during these experiments has been principally caused by decreased caloric intake, our attention passes to a consideration of the mechanisms by which the desire to eat is reduced by the drug. It was truly remarkable that by the appropriate administration of amphetamine to the dog, it would starve in the presence of food. This rendered it possible to determine whether the drug abolished the desire for food by acting peripherally on the alimentary tract or centrally on the brain. Because 4 dogs demonstrated unchanged eating behavior and a typical anorexic response to amphetamine after surgical ablation of the sensory nerves (vagi and thoracolumbar visceral afferents) of the gastrointestinal tract, it was concluded that the drug produces anorexia through some action of the central nervous system.

The fact that amphetamine still decreases or may abolish all desire for food after the gastrointestinal tract has been denervated is an important physiologic observation pertaining to the mechanism of hunger and appetite. It shows that the peripheral gastrointestinal sensory aspect of hunger (hunger pains or contractions) in the adult (or conditioned animal) are not important in the control of dietary intake and must be considered as adjunctive in the adult. However, it is not necessary to believe, as is implied in some textbooks of physiology, that the phenomenon called hunger is derived from and solely dependent on hunger contractions of the fasting stomach.

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[11] Best, C. H., and Taylor, N. B.: The Physiological Basis of Medical Practice, Baltimore, Williams & Wilkins Company, 1945, p. 610.

Since hunger and appetite are confused in current thinking and, in fact, frequently used synonymously, and since the interpretation of the action of amphetamine requires a definition of these terms, they will be defined and discussed.

Historically two general factors, referred to as hunger and appetite, have been concerned in exciting food behavior in the adult. The term hunger has been used to designate the inherent, instinctive or unconditioned aspect and appetite as the learned or conditioned aspect of food behavior.

There are two basic observations, easily confirmed, which indicate that hunger and appetite may be differentiated. First, decerebrate animals and the anencephalic infant manifest decerebrate activity in presence of gastric hunger contractions which occur after the abstinence of food, and the decerebrate activity is abolished some ten or fifteen minutes after they have been fed.[12] Second, the otherwise intact adult animal will feed after the alimentary tract has been extrinsically denervated, and a desire for a particular item of diet may be learned.

With reference to the first observation, the decerebrate activity of hunger has been explained as due to the stimulation of centers below the cerebrum by afferent impulses from the esophagus, stomach and duodenum. That is, the decerebrate activity of hunger is considered to be entirely reflex in genesis. The fact that the activity is abolished so soon after feeding indicates that the abolition of the activity is probably not due to absorbed food acting on the hunger center or centers. However, food such as dextrose has not been given intravenously to ascertain if the activity is or is not abolished. Neither has the extrinsic innervation of the alimentary tract been removed to ascertain if decerebrate hunger activity still occurs.

With reference to the second basic observation, the animal with an extrinsically denervated alimentary tract may feed because of (*a*) learning, (*b*) sensations of weakness or emptiness from somatic tissues or (*c*) the lack of adequate food in the blood. Sensations from somatic or visceral tissues are not appreciably concerned; a dog with the vagi sectioned and a spinal transection (eighth cervical) voluntarily ingests and manifests interest in food and maintains his weight.[13] The role that the composition of the blood plays in the genesis of food behavior in such a dog is unknown, but appetite based on learning certainly exists.

It is obvious that the basic requirements for a learned food behavior are present in the newborn. In accordance with the most widely accepted theory of learning, the animal is born with a set of unconditioned reflexes, which serve as the basis of learned, conditioned behavior or reflexes. The decerebrate activity of hunger is undoubtedly due to unconditioned reflexes. Nursing is another set of unconditioned reflexes associated with feeding behavior. The association of these two sets of reflexes at the time when the brain is developed to the point that association may occur is probably the beginning of appetite. In the human being, the psychic secretion of gastric juice, which is considered to be a conditioned reflex associated with pleasurable experience, occurs at the age of from 6 to 8 months:[14] this may be antedated, however, by the formation of an appetite or a simple type of conditioned food behavior and pleasurable experience.

On the basis of these considerations, one of us (Ivy[15]) has proposed the following definitions of hunger and appetite: "Hunger is a bodily state which is characterized by certain specific activities induced independently of learning (conditioning) by the abstinence from food of a general or specific type and abolished by the intake of food of a general or specific type." The expression "specific type" refers to such food factors as lack of salt (salt hunger) and water (thirst) and certain essential food accessories as vitamins, bulk and minerals. At present it is not known whether the "hunger center" in the brain which is responsible for "certain specific activities" is excited by sensory impulses from the visceral and somatic tissues or by changes in the composition of the blood. Appetite is a conscious[16] (mental) state which is characterized by a desire for food dependent on learning and induced by interest in food, which is due to the sight, smell, taste or thought of (or abstinence from) food of a general or specific type, and which is abolished by the ingestion of the general or specific type of food (to the point of satiety). That is, appetite is the conditioned or psychic component of hunger in the same sense that pain is the psychic or mental adjunct of a primitive, unconditioned avoiding or protective reflex. For example, such a view is required because there is no particular area in the cerebrum which, when stimulated, will give rise to appetite or pain, and an appetite or pain aura does not occur in epilepsy; moreover, there is no primary sensory cerebral area for appetite and pain, which are examples of a pleasurable and a displeasurable sensation or experience, respectively. However, it is well known that areas in the parietal and frontal lobe may be so involved by disease as to decrease the sensation of pain or the appetite for food. Similarly it is known that morphine, for example, decidedly changes a patient's attitude or reaction toward pain. Similarly, amphetamine may affect appetite or a person's attitude toward food.

From the preceding discussion it should be clearly evident that it is theoretically possible for a drug to diminish appetite by acting on the hunger-appetite mechanisms in the brain. Because infectious diseases and fever decrease appetite, it has been conjectured that amphetamine decreases appetite by causing some similar type of intoxication rather than by a direct action on the brain.

We suspect with Lesses and Meyerson[2a] that the drug decreases a desire for food by increasing hedonic tone or interest in other matters. This is supported by Ulrich's report[1c] that he attained more success with amphetamine in reducing the weight of obese narcoleptic persons than of obese alert patients. And there seems to be no doubt that some obese patients eat excessively to substitute for lack of pleasure derived from other pursuits. Also, one of the well recognized effects of amphetamine is to increase the willingness to endure. This assists the patient to overcome any anhedonia or to say "no" to the pleasures of eating. In the dog, however, no problem of will power is concerned.

However, the facts do not permit us to conclude that amphetamine causes anorexia only by acting on the cerebrum. It is possible that the drug acts at a lower level, or at the level of the hunger center, or at both the cerebral and hypothalamic levels. In this connection it would be well to know the effect of the drug on the decerebrate hunger activity of the pigeon, dog and monkey. In fact, one interpretation of the food behavior of the dog after the administration of amphetamine would suggest that the drug paralyzes the sense of smell for food. The dog that has received amphetamine is sufficiently interested in food to be jealous when it is being served to other dogs, yet the animal does not eat that which it is served.

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[12] Kleitman, N.: Sleep and Wakefulness, Chicago, University of Chicago Press, 1939.

[13] Sherrington, C. S.: Experiments on the Value of Vascular and Visceral Factors for the Genesis of Emotion, Proc. Roy. Soc. London **66**: 390, 1899.

[14] Taylor, R.: Hunger in the Infant, Am. J. Dis. Child. **14**: 233 (Oct.) 1917; Hunger and Appetite Secretion of Gastric Juice in Infants' Stomachs, ibid. **14**: 258 (Oct.) 1917.

[15] Ivy, A. C.: Report to the Planning Division, Quartermaster Corps, United States Army, 1945.

[16] Consciousness is considered to be a state of discriminative awareness.

In accord with present information, the anorexia-producing effect of amphetamine appears to be quite characteristic of the drug in the dog. The dose which completely prevents caloric intake does not cause obvious excitement, nausea, ataxia or other signs. The anorexia caused by the drug is different from (*a*) that of alcohol, which causes ataxia; (*b*) that of morphine, which causes nausea and sleep; (*c*) that of fever-producing substances, which decrease interest in things in general, and (*d*) that of noneuphoria-producing toxic substances, which cause generalized depression.

Among the various agents which cause anorexia, amphetamine appears to resemble cocaine most closely. However, Grossman and Cummins[17] find that 60 mg. of cocaine hydrochloride are required to cause any anorexia in the dog. This is at least ten times the dose of amphetamine sulfate which would be required.

In the use of amphetamine in the management of obesity the possibility of the development of tolerance must be considered as well as the contraindications. We observed no evidence of habit formation in our subjects.

SUMMARY AND CONCLUSIONS

1. It has been demonstrated by controlled experiments on human and canine subjects that the administration of amphetamine sulfate may cause or facilitate a loss of body weight in obese and nonobese persons.

2. The evidence shows that the loss of weight observed in these experiments was due primarily to a reduction in the intake of food.

3. In a group of 10 subjects who maintained a constant caloric intake for one hundred days the administration of amphetamine sulfate for fifty-six days caused some loss of weight during the first four to eight days in 7 of the subjects. This weight loss was most reasonably attributed to a slight (approximately 10 per cent) increase in energy metabolism due to restlessness, which disappeared on the development of tolerance. No evidence of deleterious effects of the drug was observed.

4. A daily dose of 5 to 10 mg. of amphetamine sulfate injected subcutaneously into dogs (8 to 10 kilograms of body weight) one hour before the presentation of food, which was left in the cage for forty-five minutes, caused a complete abolition of food intake for from ten to twenty-one days in some dogs. This action of the drug was not influenced by extrinsic denervation of the stomach and intestine. We interpret the evidence as an indication that the drug produces anorexia by acting on an appetite mechanism in the cerebrum or on a hunger mechanism resident at a lower level (hypothalamus) or both. Means for testing the validity of this interpretation are suggested.

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[17] Grossman, M. I., and Cummins, G. M.: Unpublished data.

Clinical Notes, Suggestions and New Instruments

SENSITIVITY TO PENICILLIN RESULTING IN ABSCESS FORMATION

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The reports of sensitivity to penicillin are ubiquitous in the medical literature and may be epitomized in the following manner: Lyons[1] reported such reactions as chills, fever, headache and eosinophilia, while Strazza[2] gave the case history of a patient with delayed sensitization to penicillin, similar to serum sickness. Hailey and Millard[3] reported a similar syndrome. Keefer[4] and Creep[5] reported urticaria. Price, McNairy and White[6] reported a case of asthma. Other toxic manifestations have been thrombophlebitis,[7] bullous dermatitis,[8] gastrointestinal reaction,[9] contact dermatitis[10] and vesicular dermatitis.[11]

The case reported herein is unique in being the first report in the literature of the formation of a sterile abscess as the result of an untoward reaction to penicillin.

REPORT OF CASE

A white man aged 38, a soldier, was in excellent health until Aug. 20, 1945, when there developed a cellulitis of the right hand following a simple friction blister of the right index finger. Treatment consisted of oral sulfadiazine plus 320,000 units of penicillin given intragluteally in interrupted doses over a period of forty-eight hours. Four weeks later abscesses, multifarious in nature, developed at the site of the penicillin injection. These abscesses were treated without the use of chemotherapy.

On Sept. 24, 1945 the patient was wounded in the right lower leg by flying rocks hurled by an exploding shell. He sustained superficial injuries of the soft tissue over the anterior portion of the right lower leg with no involvement of the bone. Treatment consisted of sulfanilamide powder dusted on the surface of the wound. Three weeks later the site of the wound drained spontaneously, and because the attending physicians feared the development of osteomyelitis, 1,040,000 units of penicillin were given in interrupted intragluteal injections. The wound healed, and the patient was discharged from the hospital. Four weeks later multiple abscesses 1.5 cm. in diameter evolved on the right and left buttocks, which were the sites of the previous injections of penicillin. In addition a small furuncle appeared on the right lower leg, several centimeters from the old wound. An unknown dosage of penicillin was again given for five days, intramuscularly, in both buttocks and in the left arm.

All the abscesses healed, but three weeks later the patient returned with several furuncles on the lower part of the right leg and with abscess formation at the site of penicillin injections,

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Commander of the Base Hospital, Col. Hervey Porter.

From the Medical Department of the Base Hospital, Selfridge Field.

[1] Lyons, C.: Penicillin Therapy of Surgical Infections in the U. S. Army, J. A. M. A. **123:** 1007 (Dec. 18) 1943.

[2] Strazza, J. A.: Delayed Sensitization to Penicillin Similar to Serum Sickness, J. A. M. A. **130:** 1071 (April 20) 1946.

[3] Hailey, H. E., and Millard, E. B.: Foreign Protein Reaction from Penicillin, U. S. Nav. M. Bull. **44:** 207 (Jan.) 1945.

[4] Keefer, C. S.; Place, F. G.; Marshall, E. K.; Lockwood, J. S., and Wood, W. B.: Penicillin in the Treatment of Infections, J. A. M. A. **122:** 1217 (Aug. 28) 1943.

[5] Creep, L. H.: Allergy to Penicillin, J. A. M. A. **126:** 429 (Oct. 14) 1944.

[6] Price, D. E.; McNairy, D. J., and White, E. L.: Severe Asthma: Delayed Sensitization to Penicillin, J. A. M. A. **128:** 183 (May 19) 1945.

[7] Progress with Penicillin, editorial, Lancet **2:** 546 (Oct. 30) 1943.

[8] Morris, G. E., and Downing, J. G.: Bullous Dermatitis (Dermatitis Medicamentosa) from Penicillin, J. A. M. A. **127:** 711 (May 24) 1945.

[9] Moore, J. E.; Mahoney, J. F.; Schwartz, W. H.; Sternberg, C. T., and Wood, W. B.: The Treatment of Early Syphilis with Penicillin, J. A. M. A. **126:** 67 (Sept. 9) 1944.

[10] Pyle, H. D., and Rattner, H.: Contact Dermatitis from Penicillin, Arch. Dermat. & Syph. **50:** 326 (Nov.) 1944. Barker, A. N.: Allergic Reactions to Penicillin, Lancet **1:** 177 (Feb. 10) 1945.

[11] Graves, W. N.; Carpenter, C. C., and Unangst, R. W.: Recurrent Vesicular Eruptions Appearing During Administration of Penicillin, Arch. Dermat. & Syph. **50:** 6 (July) 1944.

namely, both buttocks and the left arm. The treatment again consisted of 720,000 units of penicillin given intragluteally in interrupted doses. The patient was discharged three weeks later, after all signs of infection had vanished.

Five weeks after discharge, on Jan. 10, 1946, the patient came to the hospital with multiple abscesses at the former injection sites. These lesions were small, measuring 0.75 cm. in diameter. No penicillin was used at this time, and the abscesses rapidly disappeared.

On March 10, 1946 this man sustained a fracture of the mandible. An unknown dosage of penicillin was injected into the site of the fracture, and penicillin was subsequently used as a mouth wash. The fracture healed without complications. However, on April 13, 1946 a furuncle appeared on the lower part of the right leg. Penicillin, 1.8 million units in divided doses, was given intragluteally; the furuncle promptly disappeared, and the patient was discharged from the hospital on April 25. Twelve days later, on May 6, the patient was readmitted with multiple abscesses at the site of the last injection of penicillin (the buttocks).

Laboratory reports revealed that a culture of material from the furuncle exhibited the growth of Staphylococcus aureus and gram-negative bacilli. The fasting blood sugar level was 88 mg. per hundred cubic centimeters. Urinalysis was negative.

Interrupted injections of penicillin, dosage unknown, were given into the right thigh for a period of five days. The patient was discharged May 18. The patient returned again on July 16, 1946 with multiple abscesses of the right thigh. He was treated with oral sulfadiazine. At this time a sensitivity to penicillin was suspected. Laboratory studies included roentgenograms of the right leg, which failed to show any evidence of osteomyelitis or foreign body; culture from the abscesses on the thigh, which revealed Staph. aureus; a fasting blood sugar level of 98 mg. per hundred cubic centimeters and urinalysis, which proved negative.

The patient was given 160,000 units of penicillin by mistake; it was injected into the left buttock. He was again discharged on August 16. He was readmitted seven days later with multiple abscesses of the left buttock, the site of the former penicillin injection. No chemotherapy was used at this time, and the lesions rapidly healed.

On Nov. 19, 1946 the patient was admitted to the hospital to be studied for possible sensitivity to penicillin. There was no history of sensitization to drugs other than penicillin. Laboratory studies were made, and examination of the blood revealed normal conditions. The blood sugar determination was 83 mg. per hundred cubic centimeters. A blood culture exhibited no growth.

No untoward reaction occurred when 0.5 cc. of a solution of sterile water containing 10,000 units of penicillin was injected intradermally.

Several drops of the same solution, when dropped into the patient's eyes, did not produce conjunctival reddening.

In order to determine without question that the abscess formation was due to penicillin, 200,000 units of penicillin in 3 cc. of sterile water was injected into the left buttock, and 3 cc. of sterile water were injected into the opposite buttock. Some of the penicillin from the same vial was injected into another patient. This patient did not develop an abscess. Cultures taken from the vial of penicillin which was used in this experiment failed to reveal the growth of any organisms.

On Dec. 21, 1946 a sterile abscess developed on the left hip of the patient (site of the test penicillin injection), but there were no signs of an abscess on the right hip (site of the sterile water injection).

COMMENT

The injections of penicillin were received by the patient at many different army hospitals, and it is incredible that the penicillin could have been contaminated with a pyogenic organism in each of these hospitals. Rammelkamp[12] reported that the injection of turpentine into the subcutaneous tissue results in a pyogenic inflammation. It would seem that the tissues of this person are sensitive to penicillin or its impurities and that the tissues' response to the drug is much the same as that witnessed by Rammelkamp after the injection of turpentine into the subcutaneous tissue.

SUMMARY

This case of abscess formation at the site of injection of uncontaminated penicillin is to our knowledge the only case of this kind reported to date in the literature.

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[12] Rammelkamp, C. H.: Method for Determining the Concentration of Penicillin in Body Fluids and Exudates, Proc. Soc. Exper. Biol. & Med. **51**: 95 (Oct.) 1942.

ABOLITION OF PAINFUL PHANTOM FOOT BY RESECTION OF THE SENSORY CORTEX

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The phenomenon of painful phantom limb following amputation has yet to be explained, but a possible solution to the therapeutic aspect of the problem was submitted by Gutiérrez-Mahoney[1] in 1944 when he reported the complete disappearance of painful phantom fingers after resection of the hand projection of the sensory cortex. As early as 1911 Head and Holmes[2] had observed a patient whose painless phantom foot vanished after the development of a destructive lesion of the cerebral hemisphere. The purpose of this paper is to report the case of a patient dramatically relieved of an intensely painful phantom foot by resection of the corresponding portion of the postcentral convolution.

REPORT OF CASE

J. T., a white man aged 53, complaining of intense pain and numbness in the left foot, was examined at Charity Hospital in New Orleans and found to have impending gangrene due to peripheral vascular disease. On April 6, 1943 a lumbar sympathectomy was performed on the left side. The circulation was considerably improved, though the patient lost the little toe of the left foot because of gangrene. Later, a sympathectomy was performed on the other side. He continued to complain of numbness and pain, however, and in October 1943 requested that his left leg be amputated. Though the foot was fairly warm, amputation seemed advisable on the basis of the excruciating pain. The left leg was amputated above the knee. The wound healed by first intention, but convalescence was marked by throbbing pain in the stump and the prompt appearance of a painful phantom foot. The patient was discharged from the hospital on Oct. 28, 1943.

The patient was readmitted to the hospital twenty-seven months later on Jan. 21, 1946. During the intervening two years he had been constantly aware of his amputated toes, foot and ankle, which besides being painful were felt to be in a state of extreme plantar flexion. The almost intolerable pain was described as a dull ache which became sharp and intense when the stump was in a dependent position. Often, he experienced a burning sensation on the dorsum of the "foot."

Examination disclosed that the stump was well healed, the scar was freely movable and no neuroma was palpable. However, palpation of the scar was painful and caused a violent clonus of the stump.

On the assumption that the pain was of peripheral origin, the neuroma on the sciatic nerve was resected on Feb. 19, 1946. This procedure did not even temporarily abolish the pain or the phantom.

On March 2, 1946 the members of the neurosurgical staff were consulted in regard to the advisability of a chordotomy. We found the patient to be pleasant and cooperative but preoccupied with his painful phantom limb. As a therapeutic test the patient was given a spinal anesthetic, which resulted in anesthesia and motor paralysis below the level of the fifth

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[1] de Gutiérrez-Mahoney, C. G.: The Treatment of Painful Phantom Limb by Removal of Postcentral Cortex, J. Neurosurg. **1**: 156-162 (March) 1944.

[2] Head, H., and Holmes, G.: Sensory Disturbances from Cerebral Lesions, Brain **34**: 102-254, 1911.

thoracic segment. The phantom foot disappeared and the pain was relieved for about five minutes, but both returned with such severity that two doses (¼ grain, 15 mg. each) of morphine sulfate were required to quiet the patient. The futility of chordotomy having been reasonably well established, resection of the sensory cortex was advised.

Five weeks later on April 11, 1946 the central sulcus of the right cerebral hemisphere was exposed by reflecting an osteoplastic flap. The anterior and posterior central gyri were identified by stimulation with a faradic current. When the sensory cortex for the leg was stimulated, the patient complained that the phantom foot felt hot; stimulation of the motor cortex for the lower extremity caused the stump to jerk. The portion of the sensory convolution for the leg and foot was excised (gray matter and some white matter). That part of the sensory gyrus on the medial aspect of the hemisphere was included in the dissection. On further electrical stimulation no sensations in the lower extremity could be produced. Before ablation of the cortex was complete the patient announced spontaneously that the phantom foot and the pain had vanished.

On the first postoperative day there was anesthesia to pinprick of the stump extending as high as the greater trochanter laterally, the inguinal ligament anteriorly, the perineum medially and the gluteal fold posteriorly. Two days after operation the patient began to have weakness and jacksonian convulsions involving the left side of the body. When he became stuporous and aphasic, an extradural clot was suspected and the flap was reopened. There was only a moderately sized clot between the dura and the bone flap. There was no intradural clot, but the exposed portion of the brain was found to be bright red from the subpial hemorrhage. The area of resection showed no change. The dura was again closed, and the bone and scalp were replaced. By the ninth postoperative day the patient was free of convulsions, was able to move his left arm and fingers and was regaining ability to talk. Sensation in the left thigh began to return about the fifteenth postoperative day and was complete on the twenty-fourth postoperative day. The hemiplegia had completely disappeared by the eighteenth postoperative day. No sign of the phantom or the pain reappeared, and the patient was discharged from the hospital on the twenty-eighth postoperative day, May 11, 1946.

The patient was examined by one of us on March 6, 1947, eleven months after the operation. Neither the phantom nor the pain had returned. The stump was also painless and nontender. Tactile and pinpoint sensations over the stump were normal. Dr. Harry Morris, orthopedic surgeon, who also examined the patient, reported that the stump was an ideal one in every respect.

Since the operation, incapacitating atrophic arthritis with pain and limitation of motion has developed. Most affected are both shoulders, all fingers, the right knee and right ankle and both temporomandibular joints. Neither hip is involved. Arrangements were made to hospitalize the patient for study and treatment of this new problem.

COMMENT

Our experience and that of Gutiérrez-Mahoney[1] with single cases suggest that the problem of painful phantom limb has been solved, but there is a possibility that this may not be the case. Recently, Horrax[3] performed bilateral resection of the sensory cortex for painful phantom hands and arms. Relief was complete for a few weeks, but the phantoms returned and were as painful as ever. In spite of the fact that his patient was a drug addict and a compensation case, Horrax is satisfied that resection of the sensory cortex will not abolish every phantom limb and has turned his attention to bilateral frontal lobotomy as a possible solution to such problems.

Whereas our experience with resection of the sensory cortex for pain includes 5 consecutive successful cases, only one resection was performed for a painful phantom limb. The other operations were for chronic pain of other types not relieved by chordotomy and sympathectomy. Although all persons who lose an extremity have phantoms,[4] less than 10 per cent have sufficient pain referred to the phantom to require surgical procedures such as revision of the stump[5] and sympathectomy.[6] Consequently, the cases requiring cerebral operations are too few to provide any one surgeon with extensive experience. It is important, therefore, that all cortical resections for painful phantom limbs be reported so that this operation can be correctly evaluated.

SUMMARY

A case is reported in which a painful phantom foot was abolished by surgical excision of the corresponding part of the posterior central gyrus. It is urged that all cerebral operations for phantom limb be reported so that the value of this procedure may be determined.

PREVENTION OF REACTION TO BAL

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In the treatment of poisoning due to heavy metal with BAL (dimercaprol, or 2,3-dimercaptopropanol) undesirable side effects have been previously noted.[1] These reactions consist chiefly of some of the following symptoms: nausea, vomiting, headache, burning sensation of gums, nose and eyes, profuse lacrimation and salivation, abdominal cramps, flushing of face, tingling of extremities, burning of skin, feeling of constriction of the chest and restlessness. At times these complaints are so severe as to necessitate discontinuance of treatment.

In view of the close resemblance of the severe symptoms which BAL therapy caused in a patient being treated for arsenical dermatitis and hepatitis to those seen in cases of serum sensitivity reactions, 0.6 cc. of a 1:1,000 solution of epinephrine hydrochloride was given intramuscularly. He obtained rapid and complete relief.

Influenced by this response, we gave the patient 25 mg. of ephedrine sulfate by mouth one-half hour before the next injections of BAL in an attempt to prevent a recurrence of the reaction. None of the toxic symptoms were noted after any of the ten subsequent injections of graded doses of 2 to 4.5 cc. of a 10 per cent solution of BAL preceded by an oral dose of ephedrine sulfate.

A second case reaffirmed the foregoing observation. A Negro man with a generalized dermatitis due to a heavy metal was started on BAL therapy after being prepared with ephedrine sulfate, 25 mg., given orally a half hour before each injection. No toxic symptoms were noted. After the sixth injection (dose 4.5 cc.) had been given the 25 mg. ephedrine sulfate was omitted prior to the seventh dose. Within a few minutes the patient noted severe lacrimation, headache, a feeling of constriction in the chest and a burning sensation of the skin of the trunk. The following injections of BAL were preceded by 50 mg. of ephedrine sulfate a half hour before their administration, and none of the previous unpleasant symptoms were experienced.

CONCLUSIONS

Preparation of the patient with ephedrine sulfate shortly before the injection of BAL may lessen the intensity or prevent entirely the side effects of this valuable remedy.

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Special Articles

SERMONS DELIVERED AT THE ATLANTIC CITY CENTENNIAL SESSION

THE GOOD PHYSICIAN

MONSIGNOR FULTON J. SHEEN
Washington, D. C.

Whenever a man sits down in a doctor's office both he and the doctor have the right to ask each other the question "What is your philosophy of the universe?" For unless his philosophy is right the doctor cannot be sure that his bill will be paid, and the patient cannot be sure that he will live to have a bill to pay. Before an architect builds a house he wants to know who is to live in it, and before a doctor treats a patient he ought to know whether he is treating a man or an animal.

Because the physician believes in the dignity of man he will never ask himself whether the life before him is valuable but rather will profess that it is sacred, and sacred means inviolable, because God alone is its Giver. Just as in the political order the physician will say that the state cannot take away his liberties because they are the endowment of the Creator, so neither will he take a life because that too has come from the Hands of a Heavenly Father. He will realize that his profession summons him to be the protector, the conserver and the guardian of life—not its destroyer. He will never commit murder, even under the name of euthanasia, for the Fifth Commandment still binds the physician of the world. No man calls in a physician to take a life but rather to see fulfilled in the order of nature what the Divine promised in the order of grace "I am come that you may have life and have it more abundantly."

Because the physician lives in a moral universe he will see that, just as the basis of psychosomatic medicine is the fact that man has a soul as well as a body, so too he will see, in addition to other valid explanations, that in some cases at least the effect of moral guilt on health is not to be discounted. Psychiatry will make greater strides at that moment when it admits a moral as well as a mechanistic universe and begins to see that the denial of guilt is the greatest cause of morbidity in certain types of patients; that the self centered are always the self disrupted; that excessive self expression is self depression, and that what religion calls a sinner is in the psychiatric order a man who is a problem to himself; that the flight from life today through alcoholism, opiates and noise is an indication that no man can live with himself when he has lost all respect for self; that, just as the cock crew when Peter denied Our Saviour, so too nature and the mind protest when man denies his God. What some patients need is not to analyze their attitudes but to confess their guilt; what they need is not sublimation but forgiveness. Relief comes not from having their sins explained away but from having them absolved; and in some cases at least the solution that must not be outlawed is that of the Great Physician Who first told the man his sins were forgiven and then told him to take up his bed and walk.

Because the physician has one of the noblest vocations given to man, namely to minister to the temple wherein Divine Resemblance dwells, he will always maintain a personal relationship with his patients, based on that of service and function, not on profit and gain. He will see that, just as dictatorships arise to organize the chaos created by a loss of personal responsibility, so too will state medicine arise to impose planned service on doctors who have forgotten duties to their patients. State medicine is in the medical order what totalitarianism is in the political order—the forcible imposition of a plan on men who have ceased to serve, love and respect. Dachau was based on a Planned Race; the concentration camps of Russia with their 15 million prisoners are based on Planned Economics; in like manner, the foolish handling of the levers of life will bring not Planned Parenthood but Planned Ruin.

A society that will not allow a man to choose freely the politicians who shall govern him will naturally be a society where he will no longer be free to choose the doctor who will treat him. When doctors oppose state medicine because they cannot make as much money as they do now, then state medicine is inevitable; when doctors oppose state medicine because they want to maintain a personal relationship with their patients, then the compulsory organization of human service is impossible. State medicine can enter the social order only when it batters through the door of the Physician on which is written "I came not to be ministered unto but to minister."

Because a physician believes that man was made for perfect Life and Truth and Love, he will see that the greatest tragedy of life is wasted pain. No man is better just because he suffers. Pain cuts and sears and sours the soul when one can see no purpose in it or if there is no one to love for whom it can be offered. Here is where religion comes to the aid of medicine. Christianity never promised to relieve pain, but it did give a way to transcend and transfigure it by uniting it with One Who after advocating sacrifice took His own medicine on a Cross. After all, what is pain but sacrifice without love, and what is sacrifice but pain with love? Pain may be from sin but not sacrifice. A mother keeps a vigil at the bedside of her sick child: neighbors call it "foolish," she calls it love. Not to believe that our pains can serve another good is to disbelieve in God. If we have blood banks on which the anemic may draw, may we not also have spiritual blood banks on which the morally indigent may draw for their redemption? If we transfuse blood why cannot we transfuse sacrifice, and if we graft skin why cannot we graft prayer? That incidentally is why we have contemplative orders and nursing sisters, to pray and to sacrifice for the weak members of the Mystical Body of Christ that they may be made whole.

The physician, then, who is conscious that he has a vocation as well as a profession will also bring to his patients a Divine Vision. In every aching head he will see a crown of thorns and will strive either to lift it off or to turn it into a garland of roses; every bruised

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Excerpts from sermon delivered by Monsignor Fulton J. Sheen of the faculty of the Catholic University of America at the Centennial religious service, Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1947.

hand to him will be pierced with nails, every body will be a Temple of the Holy Spirit and every foot will be the vision of one riven with steel; every ailing heart will remind him of One Who wore His Heart on His Sleeves that all might know a love that was as open as the world. Every mother in labor will remind him of that other Mother who at the foot of the Cross brought forth in the pangs of spiritual childbirth all who are brothers in Christ.

Then when the physician has made his last visit to a sick bed, and the veil of life is torn aside, he shall see the Lord and Master in whose name he labored, and he shall hear from His Lips the pledge of eternal salvation and the beginning of an eternal ecstasy: "I was sick—and you visited Me."

MEDICINE AND RELIGION

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In the Book of Ecclesiasticus the famous Jewish Apocryphal writer Joshua Ben Sirach penned this immortal tribute to the physician: "Honor a physician with the honor due unto him . . . for the Lord hath created him. For of the Most High cometh healing . . . the skill of the physician shall lift up his head; in the sight of great men he shall be held in admiration."

We men of religion are gathered together this morning to give honor unto the physicians of this land—to pay tribute to the American Medical Association on its hundredth anniversary. We think of the manifold achievements of this great organization in creating new standards of medical education, in fashioning a code of professional ethics that could become the model for all other groups of thinkers and workers in the world, in combating ignorance and superstition, quackery and cultism. Through its superb publications, its Councils on Pharmacy and on Foods, its research work in the laboratories and in countless other areas of attainment the A. M. A. has proved itself to be one of the most vital instruments of social good and human progress in America.

There is a close relationship between religion and medicine. This has been true throughout the ages. Christianity with its compassionate concern with healing has been a superb patron and friend of all the healing arts. In my own Jewish tradition there has been an unbroken thread of interest in the cure of the diseases of life. Most frequently famous rabbis in Jewish history were at the same time practicing physicians combining an absorption in the laws of God with a concrete devotion to the well-being of man. Maimonides, the greatest Jewish philosopher and rabbi of the Middle Ages, was at the same time a distinguished physician; indeed much of his medical writing is astonishingly modern in tone. Religion and medicine at their best are allies in the quest for the good, the healthy, the creative life.

Not that the relationship of religion and of science has not often been a very turbulent one. There have been periods of great estrangement, as it were, between the families of science and religion, and also wise attempts at reconciliation. As so often happens in human affairs, false pride is involved, regrettable attitudes of superiority or contempt both on the part of the laboratory and of the sanctuary. Today at this most dangerous moment in human history religion and science must recognize their interdependence, must learn to transcend old wounds and hurts, to forget what partisans on both sides have regrettably said and done, and recognize that each has much to learn from the other and that there are vital unities which bind them together—a therapeutic intent which may yet heal and save mankind. Prophetic religion and scientific medicine meet in the fact that both of them are built on *faith*, share creative *curiosity* and subordinate themselves to necessary *discipline*. Science calls its faith by the name of assumption or hypothesis, yet often its greatest discoveries are achieved by what the late Walter Cannon called "serendipity," a creative hunch or an intuitive leap into the unknown. Religion calls its faith by the name of doctrine, dogma or belief.

Faith, curiosity, discipline are common both to prophetic religion and to scientific medicine. Obviously there are differences between the two which must not be blurred. Religion must concern itself primarily with the goals and values of life, whereas science concerns itself primarily with the facts and means of life. The interdependence, however, is so inescapable that no rigid barriers can or should be erected between the sanctuary and the laboratory.

There should be a "two-way passage" between medicine and religion. Religion can learn much from the practice as well as the theory of medicine—it can learn the blessings that come to the world through the unfettered use of reason and experimentation, through the attitude of tentativeness and absolute humility before the facts—the attitude that Huxley described in his famous phrase "Sit down before the facts as a little child or you will know nothing." Religion, which often speaks eloquently about the dignity and the value of the individual, can learn much from the way medicine acts concretely in treating the individual person with gentleness, compassion and concern—can learn many indispensable lessons in applied idealism. Medicine can well say to religion "Beware of the arteriosclerosis of dogma and the dangerous bacteria of sectarian pride. Be on guard against every retreat from reason into uncritical and uncriticized faith."

At the same time we of religion can and must say to the spokesman of science "Beware of self complacency and the idolatry of the partial. Do not make the mistake of dismissing all of religion because some of it is primitive, superstitious or untenable. Do not succumb to the genetic fallacy." The doctor by virtue of his absorption in the specific and the concrete ofttimes ignores the Wider Context of the universe. Prophetic religion must remind the scientist that the sources of salvation and of healing in the world—the sun, the earth, the food and the herbs of the earth as well as the intellect of man and the instruments fashioned by that intellect—are basically not man's creation. They are made available to us by the Creative Power, God. We today can accept no infantile conception of Deity. At the same time men of science are hopelessly arrogant and tragically parochial when they try to ignore or deny the Creative Power working in and through us, revealing Himself in the restless mind of man and the law-abiding majesty of nature. When we rebel against Him it is after all with His weapons of intellect and of conscience that we revolt; when we try to flee from God it is actually on His created carpet of law and of causality that we escape.

Sermon delivered at the Centennial religious service, Ninety Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1947.

True, there are fundamental differences between science and religion in area of interest and in universality of outlook. Science stresses tentativeness, analysis and the realm of fact; religion emphasizes commitment, purpose, synthesis and value. Science often can tell us how to get what we want; religion at its noblest reminds us about what we ought to want, giving us an ultimate feeling of relatedness to a Divine Mind and Purpose, a supreme loyalty to the rational good.

At the same time prophetic religion and scientific medicine are bound together by many great ties. We both recognize how frail man is—man a broken reed at times, a bent reed at other times but a "thinking reed" blessed by God with the capacity to reason, to explore, to experiment, to create. Religion and medicine join hands at the moment of birth, the majesty and mystery of new life and also in the poignant hours of death when the thread of existence is severed by the inexorable scissors wielded by the Angel of Death. Religion and medicine in their truest moments are humble in the recognition that the blessings and the healing resources of the universe are not invented by us human beings but discovered and used by us and that whether we admit it or not we are always dependent on the Power greater than ourselves. Finally, religion and medicine are united in a sense of commitment and consecration to the service of life.

SPIRITUAL SIGNIFICANCE OF MEDICINE

At this time of the celebration of the hundredth anniversary of the American Medical Association it is fitting and proper for us to reflect on the spiritual and psychologic significance of medicine in this time of crisis, to consider the dangers ahead and also the tasks ahead.

What is the spiritual and psychologic significance of medicine? I see it in three dimensions: as hope for human life, as the symbol of progress, as the moral challenge to the nations of the earth. I see medicine as the Attorney for the Defense of man, as the antidote to despair and pessimism in our age—a pessimism reflected in the poetry of an Auden, the Existentialism of a Sartre, the novels of a Kafka. The doctor knows all of the evils and brutalities of life, but he is the eternal champion of Eros against Thanatos, the life-wish against the death-wish. Medicine carries on a constant warfare with germs and bacteria, virus infections and degenerative diseases. The High Command of medicine is to be found in the laboratory amidst the retorts and the test tubes; its line officers are to be found in every hospital and clinic working to conquer new territory for the kingdom of life. Let us listen to no premature elegies for our human species, for medicine by its deeds is the spokesman of hope, proving that man is something more than self centered and selfish, that there is an altruistic component in the human heart and that human nature is capable of rationality, objective analysis and a continuing conquest of the enemies of human survival, both external and internal. The doctor is the symbol of man as the doer, the searcher, the life giver.

Medicine, in the second place, is a symbol of progress. Carl Binger in his provocative work "The Doctor's Job" makes very vivid this truth of progress which we tend to overlook in our skeptical age. Just fifty years ago there was no x-ray, no Wassermann test; vitamins were unheard of; typhoid and diphtheria were still an enormous menace; there was no radium. What undreamed of vistas of achievement scientific medicine has opened up within these last few decades! Realistically we dare to hope for a time when cancer will go the way of typhoid, when many of the degenerative diseases will come under the control of man as tetanus has come under his control. A generation that has discovered penicillin and sulfanilamide and that now has at its disposal radioactive substances unheard of ten years ago can find in medicine the antibiotic to human despair, the assurance of human progress.

There are many new frontiers for medicine in the conquest both of physical and of mental disease. Psychosomatic medicine is one of those great new frontiers. It is imbued with the spirit of Paracelsus, "He who wants to know man must look upon him as a whole." The spirit of psychosomatic medicine is quite close to that of the religion of Judaism, which always looked on man as an interwoven unity of body and soul, . . . convinced that it is impossible to tell where the body ends and the soul begins. Religion and medicine must both become concerned with the whole man today. It is no secret that in our tense and complex age millions of human beings are suffering not only from dislocated bones but from dislocated emotions, minds and souls. The war has educated all of us to the enormous role that emotions play in the psychic economy of the world. Indeed, until men learn how to manage their emotional life artistically there will be neither peace nor justice in the world at large, nor health and tranquillity in the organism at home. The words of Shakespeare "Anger's my meat; I sup upon myself and so shall starve with feeding" apply in one degree or another to multitudes everywhere. Anger or hate, grief or loneliness are the meat of life for millions of uncertain, frustrated human personalities; many do sup upon themselves and starve themselves into asthma and hypertension and many of the other ills that flesh is heir to.

As psychosomatic medicine and group therapy advance and thousands of doctors become trained in the newest insights of psychiatry and psychoanalysis we shall learn how to cure these "toothaches in the heart" of man—the toothache of repressed anger, frozen love, congealed emotion, embittered cruelty—learn also to take away many of the pains of inner conflict and to sew together with the surgical needle of the understanding mind the gaping and open wounds that life inflicts upon us all. Such a medicine will parallel the great strivings of religion at its best to make man mature, integrated, inwardly tolerant, free of corrosive self contempt, liberated from the inner Egypts of cruelty and callousness and able through such emotional maturity and psychic independence to become a genuine co-worker and collaborator with God. Medicine not speculating about the *problem of evil* but working restlessly with the *evil of problems* is today truly a symbol of human progress.

In the third place medicine is a moral challenge to the nations of the world. It looks on sick men not in order to condemn them but to understand and to cure them. So should we look on sick nations in the world. The therapeutic intent of medicine which has worked miracles should become the therapeutic intent of statesmanship. Furthermore there are no narrow national sovereignties in the discoveries of the medical clinic. In medicine there truly is "one world." There just is no Chinese insulin or American penicillin. There is the same insulin and the same penicillin for the human family everywhere. Furthermore there can be no real isolation in science because its truth can be verified only by being shared. Doctors trained and molded by the tradition of their profession have learned the art of cooperation, seeing that truth yields up its secrets only through collaborative team work. There is a universality about the healing process which applies equally well in China or Russia, Britain or America; there are no frontiers dividing truth from truth. What medicine has been able to achieve it has done through the free intellect, the boundaryless laboratory, the creative interchange of ideas, the humble sharing and cooperative interrelationship of men of all nations, races and creeds. Medicine is William James's "moral equivalent for war" . . . it is the sublimation of selfishness and self centeredness into an immortal and worldwide quest and attainment of healing truth. The nations of the world can learn a moral lesson from medicine—that just as the healing drugs of one city or one nation know no limited sovereignty but are to be made available to the human family everywhere, so the healing laws of peace and order must apply everywhere under world sovereignty and world government.

THE DANGERS AHEAD

There are enormous dangers ahead for religion and for medicine; the danger of religion succumbing to a rigid dogmatism or a pride in the vested interest of ideas inherited from the past; of medicine succumbing to an idolatry of its own technics, a worship of a part of life as the whole of life, a blind unwillingness to see the wider context of Divinity in the world. There are dangers that confront the whole human enterprise. The world is going to have to become better than it has ever been or there will be no world. Many of the luxuries we have afforded in the past we can afford no longer—the luxury of prejudice, hatred and war. The choice is really before us; *will it be the isotopes of healing or the radioactivity of death?* If humanity cannot take a lesson from the pages of medical science, of compassionate and courageous doctors concerned not with death but with life, then we and our children do not deserve to survive.

THE TASKS

There are not only great dangers but great tasks ahead. In the increasingly interdependent society of our age we are going to have to plan for abundance, for health, for equality. The basic question is whether it is going to be voluntary planning or compulsory planning. The medical profession in the degree that it wishes to avert and to avoid coercion from without will certainly have the wisdom to plan voluntarily for adequate treatment of all Americans irrespective of status or class. A democratized medicine, like a democratized religion, is one of the prerequisites of our vast industrial society. We need new insights today into the enormous influence of a frustrating environment and all of the traumas of unemployment and poverty and ruthless economic competitiveness on the plastic material of the human spirit. We need doctors and religionists filled with the spirit of the American poet Walt Whitman: "I know that all men ever born are my brothers . . . in all people I see myself. . . . I will not have a single person slighted or left away. . . . I do not ask the wounded person how he feels. . . . I myself become the wounded person. Behold I do not give lectures or a little charity. When I give, I give myself. Whoever degrades another degrades me. . . . By God, I will accept nothing which all cannot have their counterpart of on the same terms."

This is the spirit which animates the true physician. In his feeling of relatedness and concern for his patient the doctor does not give lectures or a little charity, he gives himself. He has a kind of empathy which makes him feel his essential oneness with the suffering and sensitive human family.

The equality and brotherhood of mankind which both religion and medicine proclaim are made vivid in a remarkable passage from an ancient Hebrew manuscript. An old rabbi asks the question "How can we love the Lord our God with all our heart and soul and might when we can never see God, the invisible spirit of the universe? We can love God best by loving His letters best. Just as a child learns the alphabet one letter at a time and then combines the letters into words and the words into sentences until at last he is able to read a book, so should we regard every human being as but one letter in the alphabet of God. The more letters we come to understand and to treasure, the more we can read the Book of God and love its Author."

That ancient rabbi teaches us that the true meaning of life is to be found in this test: "Man, do you by your cruelty or callousness blur the letters of God or even erase them, or do you by your compassion learn to treasure the letters of God, your fellow human beings?"

This magnificent parable from Jewish literature certainly applies to medicine and to religion in the world of today. Some wonderful human letters are blurred by bigotry and even erased by discrimination. Religion, if it means anything in human life, must battle ceaselessly against walls and bricks of prejudice, and the medical profession must learn to demolish all barriers and obstacles placed in the way of human talent, frustrated and denied educational fruition because of color or race or creed.

Religion when true to its prophetic heritage does treasure the letters of God by investing every man with dignity as a child of the Divine. We also know that the surgeon, the doctor, the psychiatrist polishes and preserves the consonants of divinity—human beings, men, women and children—by making these letters glow luminously with health, integration, maturity. Religion and medicine must both come to value every person on earth as an equal consonant in the vocabulary of Divinity.

It is characteristic of prophetic religion that it emphasizes the Messianic dream—the hope of a world redeemed from evil and purged of iniquity and freed of all the barnacles of pain and disease, a world that will become one as God is one. How far we still are from that Messianic Kingdom! We who live in this twentieth century recognize that there are no absolute answers but only partial victories; yet these victories are good omens of a nobler and freer future when the letters of God on earth will not be blurred but rather will be burnished with love and with understanding. The laboratory and the sanctuary can become allies and creative partners in helping to bring a little nearer that age of the Divine, by learning to work together with mutual respect, mastering together the new secrets of nature and of human nature, laboring together in the words of an ancient Hebrew hope and prayer "for the blessing of all and the hurt of none, for the joy of all and the woe of none."

Amen.

CAESAR, GOD AND MEDICINE

Rev. RALPH COOPER HUTCHISON
Easton, Pa.

The absurd paradox of this era is constituted by the prodigious achievements of medicine on the one hand and the destructive fury of war on the other. That such miracles should be performed in the alleviation of human suffering and the preservation of life while war spreads disease and death is a fateful coincidence that deserves deep study and thought. To the physician or surgeon who exerts all of his skill and strength for the preservation of some precious life, it must be ironic to realize that within our own time two nations, Russia and Germany, have each planned deliberately and carried through successfully the tortured destruction of an estimated five million of their own finest citizens. Add to this the smaller slaughters in smaller nations and then the crippling, the diseasing, the maiming, the blinding and the killing of an incalculable number in history's two greatest wars, and medicine's mighty effort is dwarfed in comparison.

War, I think, should be recognized by the medical profession as humanity's worst disease. With world inclusive precision it systematically destroys life. It maims, it blinds, it disfigures. It starves whole peoples and leaves them subject to the disease which follows undernourishment. In a day it destroys the sanitary and health facilities created by the labors of a generation. Taking men of the finest health it places them in prison camp and slave labor subject to the primitive ravages of every disease known. And it reaches to their minds and destroys the faith and hope and sanity on which health must be based.

This disease of war is more widespread than our hospitals and our health measures. It literally covers the face of the earth. Its force is inexhaustible. At times and most of the time it is supported by more governmental funds in a few weeks than has medicine been given in all modern history. It commands the devotion and efforts of more men in one generation than have served medicine in all recorded history.

War is the arch enemy of medicine and of civilization. International war must be stopped and its increasing cadence must be retarded or the magnificent achievements of medicine will come to a brutal futility. The ghastly dichotomy of medicine on one hand and war on the other cannot go on forever. One must triumph—either medicine and civilization or war and barbarism.

If there is any profession in the world to whom the outcome of this struggle is vital, it is to yours. If any sermon is to be preached to medicine, it is this for the preservation of the life and health of mankind.

I

International war can be stopped, but not by the methods which we have used since 1914. These methods give priority to negotiation, arbitration, treaties, compromises and appeasement. They are sincere and even scholarly attempts to eliminate war by eliminating the causes of war. But at the same time they deliberately avoid the issue of war itself. They are expedients by which leading and democratic nations evade their own lonely responsibility of stopping this worst disease of history.

Far from the madding crowd of statesmen, politicians and diplomats and within this group isolated in its practical science let us review this problem reasonably. When a criminal maniac breaks loose and begins to slaughter people, we do not call a conference to study the social and hereditary factors out of which developed his murderous fury. Nor do we begin delicate negotiations with him. Nor do we strive to appease him. We stop him dead in his tracks by any means possible. After he is stopped we return to the conference table and the research problem to devise methods by which the development of such criminals may be prevented in the social order.

In the world of international relations this is exactly what we have refused to do since 1914. Through courts of international justice, through treaties, concessions and appeasements, through leagues of nations of one kind or another we have striven to eliminate the conditions out of which rise wars. And under cover of these benevolent measures we have excused ourselves and evaded our responsibility to stop war. While afraid to go out and stop the criminal we have rationalized our cowardice by vigorous debates on the cause and cure of crime.

We could have prevented this last world war. We know that now. Had we or England or France sent one squadron in that direction when a rebellious Japanese army invaded Manchuria, had one regiment been moved when China was invaded, had one nation showed fight when Italy invaded Ethiopia, had one democracy strapped on its arms when Germany and Italy invaded Spain, had any nation started to move its forces when Hitler marched into the Rhineland, that developing world war would never have started. It could have been decisively and easily stopped at any of those points. But the democracies were afraid to lead out and to stop war.

International war has been stopped before when great democracies chose to do so. Two brilliant pages in history record those achievements, and both came when nations were willing to assume responsibility. The first and the greatest perhaps in all history was under the leadership of Jefferson, Madison and Monroe, when the then little nation composed of these states decided to stop for all time any international European war on this continent. They did not do so by leagues, appeasements or treaties. They simply stopped war. They announced to the world that European wars on this continent were all over, that there would be no more. And, small and weak as they were, they meant it—and incidentally we still mean it. And European international war on this continent was stopped forever.

It was done another time. This was in the Pax Brittanica, the hundred years of international peace from 1815 to 1914 enforced by Britain for its own purposes. No wars were permitted save trifling ones to which it had no objection. Had the German navy not grown strong enough to challenge the British navy, no one knows how long that peace might have been further maintained by Great Britain.

Now, America can prevent all international war. We have the strength and position. We can if we will step out and proclaim an imperialism of peace and freedom. We can announce that every nation is to stay within its own borders and that, whenever one force invades or attacks another for purposes of con-

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Abstract of the sermon which Rev. Ralph Cooper Hutchison, president of Lafayette College, Easton, Pa., delivered at the Centennial religious service, Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1947.

quest, we will loose everything that we have from funds to bombs to stop that attack or that invasion. We cannot solve all of the problems of the world. We cannot bring justice between nations. We cannot assure economic fair play. These may in time be achieved by the United Nations. But we can stop war and, if we will stop war, then the forces of civilization may do their work and eventually eliminate the causes of war.

II

The immediate reaction to this is that such a problem is a political one, that men of the medical world must do their own highly specialized work and that this must be cared for by the statesmen and the politicians. The suggestion that the medical profession should do something about a political problem is open to considerable debate. But that medical men should do something about this and other political and religious problems, I wish to urge.

One of the major problems of democracy has developed in this age of high specialization and lies in the failure of highly trained specialists to take their part in democracy and in religion. The first deals with the organization of men. The second deals with their driving motives and convictions, and both fail unless the ablest and most mature minds participate in full force. The specialist, the scientist, the engineer and the physician are now taking the position that they must carry on their own significant work and must leave government and religion both to the professionals within those fields. As a result, the nonparticipation of medical men in the responsible work of both church and state is notorious.

The reasons for this are understandable. It might seem wrong that one so highly trained and superbly equipped as for medicine should allow any time or strength for church or government. This hard acquired skill, this priceless knowledge needs its fullest use in the saving of health and life. Furthermore, the very narrowness of medical education and its complete concentration on the scientific leaves the medical man feeling unqualified for active participation in the fields of religion and government. Humanistic studies having to do with the basic problems of human relations and with the thinking and motives of men—such studies are almost totally excluded from the college and professional education of medical men. Thus the medical profession, confident in the field of its own skill, hesitant in politics and religion, resolves to let others carry these social responsibilities.

But, curiously enough, neither democracy nor religion can function if left to mercies of their own professionals. Their problems are universal. They affect every man, woman and child. They affect every aspect of man's welfare, of his thinking and of his conscious existence. The problems are too great for any one group. The rich cross breeding of thought and the broad strength of men of great skills and knowledge in other areas are needed in these. Democracy will not survive if you who are the specialists do not share the labors of democracy. It cannot stand and fight for human rights if the specialists of our era remain in their laboratories, in their shops, in their hospitals and clinics and studies. We cannot win in democracy and for democracy if our increasing army of specialists fails to take its share in our social and international tasks.

Many old battles have now to be fought again. We thought that certain victories had been won. There is this battle for peace which we once thought was won. There is the battle against barbarism which must be fought anew. There is the issue of human slavery, which has returned like a plague over the earth. There is the great issue of religious liberty, now denied in nation after nation. There is the struggle to maintain a Christian civilization and the Christian ideal in life.

And there is a time when the preacher must lay aside his Book, the lawyer his gown, the teacher his rule and go out and share the human task of religion and government. By that same token there must be times when the new scientist of this day must aid, when the engineer must lay aside his plans, the technologist his microscope, the surgeon his gown and take full part in the task of Christian civilization.

Perhaps the words of Christ could, this day, have a special meaning for the medical profession, a meaning not quite what he intended when he said

Render, therefore, unto Caesar the things that are Caesar's and unto God the things that are God's.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following statement.

Austin Smith, M.D., *Secretary.*

METHADON, GENERIC TERM FOR 6-DIMETHYLAMINO-4,4-DIPHENYL-3-HEPTANONE

In view of the fact that the term Amidone, which has been applied to the chemical 6-dimethylamino-4,4-diphenyl-3-heptanone, seems to have proprietary restriction, the Council in cooperation with several interested pharmaceutical manufacturers and investigators gave consideration to the coining of a generic or nonproprietary name for the compound. Various proposals were received from those concerned, and eventually the term Methadon was agreed on.

As a result of the foregoing consideration the Council voted to recognize the word Methadon as the generic designation for 6-dimethylamino-4,4-diphenyl-3-heptanone.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin Smith, M.D., *Secretary.*

BISMUTH AND POTASSIUM TARTRATE (See New and Nonofficial Remedies, 1946, p. 250).

The following dosage form has been accepted:

Brewer & Company, Inc., Worcester, Mass.

Bismuth and Potassium Tartrate: 2 cc. ampuls. Each ampul contains bismuth potassium tartrate 50 mg. with benzyl alcohol 0.04 Gm.

ESTROGENIC SUBSTANCES (WATER SOLUBLE) (See New and Nonofficial Remedies, 1946, p. 447).

The following additional dosage form has been accepted:

Ayerst, McKenna & Harrison, Ltd., New York

Tablets Premarin: 2.5 mg.

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SATURDAY, AUGUST 23, 1947

HOSPITALS AND THE GENERAL PRACTITIONER

At the centennial meeting in June in Atlantic City the Council on Medical Education and Hospitals presented a supplementary report to the House of Delegates reviewing the policy of the Council, of the Advisory Board for Medical Specialties and of the House of Delegates on the appointment of general practitioners to hospital staffs. The Board of Trustees requested that copies of this report be transmitted to the various hospital associations and to each hospital registered by the Council, and that is being done this week in accordance with the Board's request.

This report of the Council [1] takes note of the fact that certain hospitals have established a policy of limiting staff appointments to physicians who are certified by specialty boards or who hold memberships in certain special societies. The report emphasizes that such a policy is contrary to the principles of the Council on Medical Education and Hospitals and appears unsound.

The Council's statement points out that the House of Delegates in 1946 approved a resolution encouraging hospitals to establish general practitioner services and specifically stating that the creation of general practitioner services would not prevent hospitals from being approved for the training of interns or residents.

To clarify this action further the Council requested authority to amend that section of "Essentials of a Registered Hospital" which deals with the establishment of staff sections so as to include specific mention of general practice sections. This amendment was approved by the House of Delegates and the amended "Essentials of a Registered Hospital" is being distributed with the reprints of the supplementary report.

The Council's report and its endorsement by the House of Delegates should make clear beyond question to the boards of trustees and directors of hospitals that any rule barring a physician from staff privileges because he does not possess a certificate from one of the specialty boards or membership in a special society is not in accord with the expressed policy of the American Medical Association and the Advisory Board for Medical Specialties. Hospital staff appointments should depend on the qualifications of physicians to render proper care to patients as judged by the professional staff of the hospital and not on certification or special society membership.

No fixed views exist at present as to what regulations should be established for general practice sections or for the activities of general practitioners in other hospital sections. This is a problem in which local conditions must be carefully weighed and the results of intelligently planned experiments studied. Clear thinking and unselfishness on the part of both specialists and general practitioners will be needed in devising workable programs.

In general it would seem reasonable that general practitioners should be extended privileges in the various departments of a hospital in accordance with their personal ability as judged by the heads of the different sections or by a committee of the staff. A paper on how a general practice section has operated over a period of eight years in one large general hospital was recently published in The Journal.[2] Reprints of this article are being distributed with the supplementary report.

Those most concerned that adequate provisions be made to preserve access to hospitals for general practitioners realize that in many instances university hospitals or institutions designed for special purposes may not be able to establish general practice sections. Such hospitals, however, account for only a small fraction of the total hospital beds in this country.

It is likewise accepted that preserving a place on hospital staffs for general practitioners is not a disavowal of the efforts of physicians, administrators and trustees to make our hospitals centers for providing the highest quality of medical care. The objective is to prevent competent physicians from being denied for arbitrary, unsound reasons the right to practice medicine in hospitals. The extension of staff membership to qualified general practitioners should serve as a stimulus to every general practitioner to maintain the quality of his work at the highest level.

The statement of the Council and the action of the House of Delegates should have a beneficial effect in restoring balance and clear thinking to a situation which has become distorted and confused in several regions in this country.

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[1] Supplementary Report of Council on Medical Education and Hospitals, J. A. M. A. **134**: 711 (June 21) 1947.

[2] Miller, M. H.: General Practice in a Large Hospital, J. A. M. A. **134**: 15 (May 3) 1947.

IMMUNITY IN SYPHILIS

A new approach toward understanding the nature of immunity in syphilis will be possible, according to Urbach and Beerman,[1] if further study confirms the preliminary demonstration of complete sterilization by penicillin therapy of animals experimentally infected with syphilis and of syphilitic pregnant women. Human beings do not possess natural resistance to syphilis. Immunity to syphilis develops in man as a result of syphilitic infection. The development is gradual and never proceeds as far as that of most of the other immune reactions of human beings. Experiments demonstrate that syphilitic immunity in susceptible animals develops slowly. During the early phase of the infection the untreated rabbits are wholly receptive to a second infection. After the ninetieth day there is evidence of partial immunity, so that the animals no longer develop chancres in response to reinoculation. Where the infection is eradicated by drug therapy before any immunity has had time to develop, that is, in the early stages, the animals react with formation of chancre when reinfected, because the intensive treatment in the early stages of infection serves to check the invader and thus indirectly prevents the development of active immunization: the latter can arise only in a thoroughly infected body. Energetic treatment in the late stages will protect the animals against reinfection.

Chesney[2] believes that animals treated in the late stages are biologically cured and at the same time actively immunized because they were thoroughly infected for a sufficiently long time. Kolle denies that these animals have really been cleared of the infection, claiming that they harbor an asymptomatic superinfection as shown by positive lymph node or organ transfer test if performed a sufficiently long time after the last administration of chemotherapy. Since penicillin can apparently effect a speedy cure of syphilis and is at the same time rapidly eliminated from the organism, future experiments might be tried with the aid of this new spirocheticidal agent. The reinoculation test, according to Urbach and Beerman, can hardly constitute a reliable criterion of cure in treated animals. We can only depend on the infectivity of tissues removed from treated animals at appropriate intervals after cessation of treatment and inoculated into normal animals.

Immunity in a syphilitic person is never at any stage of the disease absolute but only relative. Therefore the idea of achieving active immunization in syphilitic persons by administering virulent spirochetes must be discarded; any such attempts are likely to be dangerous. Untreated infection with syphilis confers on the human being immunity which prevents natural superinfection but does not protect against massive artificial superinfection. This immunity is not strong enough to defend the organism against recurrent blood borne thrusts of the primary infection. Intensive treatment of early syphilis is in all probability capable of curing the disease. While such treatment simultaneously abolishes all immunity that is in the process of developing, it does not endanger the patient if it is strong enough to eradicate the infection completely. But if antisyphilitic therapy is inadequate to sterilize the body, the organism's natural defensive mechanism will be seriously impaired. This means that the patient is left both without cure and without defense, a situation often leading to neurorecurrences, therapy resistant cutaneous relapses and precocious tertiarism. A patient may be completely cured and yet remain refractory to natural reinfection. Even in patients treated early, reinfection does not necessarily mean that the first infection has been completely eradicated; theoretically, at least, superinfection may have occurred because, as Moore[3] points out, adequate methods of differentiating between the two are not available.

Chesney likewise stresses that a small amount of treatment in early syphilis is worse than none because it interferes with the body's own defensive mechanism, while at the same time it often fails to eliminate the infection. It leaves the patient worse off than nature alone would have left him and is therefore to be condemned.

Urbach and Beerman regard immunity as a special aspect of allergy. The entire course of syphilis may be explained on the basis of allergy. The reaction of the organism to reinfection also suggests an allergic mechanism. Thus Chesney points out that the destructive character of tertiary lesions is due to the fact that the body has changed its way of reacting toward the spirochetes and now behaves in a much more violent fashion. It has become hypersensitive or allergic, which is another way of saying that a small charge of spirochetes is now capable of setting off a considerable explosion of tissue reaction. Attempts to develop a method to determine the allergic state of a syphilitic individual have thus far been unsuccessful. Details of the mechanism of the defensive reaction against syphilis are still unknown. It is definitely not humoral but is probably a tissue or cellular reaction. The existence of antibodies against syphilis has not been demonstrated. The relationship of the positive serologic reaction to the organism's capacity to produce antibodies against spirochetes is not clear, and numerous attempts to induce active or passive immunization against syphilis in man and animals have to date failed to produce any significant results.

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[1] Urbach, Erich, and Beerman, Herman: The Present Status of Immunity and Allergy in Syphilis, Am. J. Syph., Gonor. & Ven. Dis. 31: 192 (March) 1947.

[2] Chesney, A. M.: Syphilis as a Problem in Immunity, South. M. J. 29: 1230 (Dec.) 1936.

[3] Moore, J. E.: The Changing Concept of Reinfection with Syphilis and Its Applicability as a Criterion of Cure, Am. J. Syph., Gonor. & Ven. Dis. 29: 474 (July) 1945.

Current Comment

CONTROL OF INTERFERENCE CAUSED BY DIATHERMY EQUIPMENT

More than ten years ago the Federal Communications Commission was requested by radio communication agencies to formulate regulations to control the interference caused by diathermy equipment. On May 9 1947 the commission released Public Notice number 7722, which document assigned three frequency channels for medical diathermy. The channels are 13.66, 27.33 and 40.98 megacycles in arithmetic progression and correspond to wavelengths of 22, 11 and 7½ meters, respectively, in harmonic progression. The widths of the channels are approximately 15, 320 and 40 kilocycles. Radiations from frequencies other than those specified shall be suppressed so that radiation does not exceed a strength of 25 microvolts per meter at a distance of a thousand feet or more from the diathermy equipment causing such radiation The commission pointed out two methods for operating diathermy apparatus in order to comply with these rules for equipment manufactured after July 1, 1947. The first method is to operate within assigned frequency bands using equipment either "type approved" or certified by a competent engineer. The second method is to operate on any frequency, provided the equipment is enclosed in a shielded room with a filtered power supply and that all radiation on any frequency is limited to 15 microvolts per meter at a distance of 1,000 feet or more from the diathermy equipment. Operation in this manner also requires certification by a competent engineer. A physician owning and operating a diathermy apparatus manufactured prior to July 1, 1947 may continue to operate for a period of five years, provided the equipment does not interfere with authorized radio services. If interference is reported, the physician is responsible for eliminating the disturbance to radio communications. This may be accomplished in some instances by readjusting the existing diathermy appliance. If no means can be provided to eliminate the interference, the physician becomes subject to the new rules and regulations. That is, he must screen his present apparatus or acquire frequency controlled equipment. The channel 2,450 megacycles has been assigned, corresponding roughly to 12.2 cm. wavelength. A channel in the neighborhood of 6 megacycles will be announced later Frequencies of 915, 5,850, 10,600 and 18,000 megacycles have also been allocated for industrial, scientific and medical use. At present the commission has not found it necessary to make any rules applicable to surgical diathermy. The medical profession and the manufacturers of diathermy apparatus are to be congratulated on the successful cooperation with the Federal Communications Commission and the representatives of radio industries on reaching a solution of this perplexing problem in the field of radio communications and diathermy.

CONTROL OF VITAMIN D MILK

In 1933 the Council on Foods and Nutrition for the first time granted acceptance to bottled fresh milk fortified with vitamin D. Since then the number of dairies that have applied to the Council for such consideration is legion. In order for dairies to secure the Seal of Acceptance of the Council they are required to declare on their label or bottle caps the source and unitage of vitamin D and must have their advertising copy approved by the Council. In addition, at least twice yearly, proof must be submitted to the Council in the form of bioassay reports attesting that the milk has been assayed by a reputable laboratory and found to be up to the required potency of 400 units of vitamin D per quart. While a large number of concerns that sell vitamin D milk employ the Council's Seal and abide by the regulations set forth, purveyors of vitamin D concentrates sometimes sell their wares without mentioning the need for routine control to assure the physician and the lay public that proper potency is being maintained. Unless state, municipal or Council regulations require periodic checkups for the vitamin D content of milks, none, apparently, are made. Such large cities as Chicago, Cleveland, Detroit, St. Louis and New York require frequent tests. So far only five states have regulations governing vitamin D milk and have made provision for testing such milks biologically. They are Connecticut, New York, Kentucky, Virginia and Wisconsin. In view of the fact that vitamin D milks are now depended on by physicians to supply vitamin D, it might be well for doctors to inquire of their local or state health departments as to whether or not such milks are subjected to routine control and whether or not such regulations exist for the protection of the public and the medical profession.

THE LATEST REVISION OF THE UNITED STATES PHARMACOPEIA

The thirteenth revision of the United States Pharmacopeia has been published and is now available for all who are interested in official standards and rational drug therapy. This revision became official in the United States on April 1, 1947. Indispensable to pharmacists, drug manufacturers, teachers of medical students and many others, it serves also as an interesting guide to changes in therapeutics. Now revised every five years, the United States Pharmacopeia includes in each revision new monographs, omits others, and in general provides a reference source that should be familiar and handy to the entire medical profession. The letters "U. S. P." inspire confidence in drugs to which they are appended; they indicate a degree of standardization that is acclaimed the world over. An example of such wide recognition is the fact that the book is also official in several Latin-American countries. The present edition is especially worthy of commendation. Those who participated in its preparation have a good reason to be proud of a job well done.

ORGANIZATION SECTION

Official Notes

MIDWINTER (SUPPLEMENTAL) SESSION OF AMERICAN MEDICAL ASSOCIATION

After careful investigation of the availability of accommodations for a midwinter (supplemental) session of the American Medical Association in the short time at its disposal, the Board of Trustees selected Cleveland as the place of that session, since the accommodations for meeting places and for sleeping rooms seemed to be adequate and a convenient time seemed to be open. The midwinter session will therefore be held in Cleveland, Jan. 5 to 8, 1948, the first two days being devoted to a session of the House of Delegates and January 7 and 8 to General Scientific Meetings devoted exclusively to the general practitioner.

The Scientific Meetings, the Scientific Exhibit and the Technical Exposition will be housed in the Cleveland Auditorium, but the place of meeting for the House of Delegates has not yet been selected. The Council on Scientific Assembly, in cooperation with the Board of Trustees, will prepare the program for the Scientific Meetings.

Information concerning hotel reservations will be published as soon as arrangements concerning this matter have been completed.

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS

The Board of Trustees has selected Nov. 7 and 8, 1947 as the time for the Annual Conference of Secretaries and Editors, which will be held at the headquarters in Chicago, starting at 10 a. m., Friday, November 7. The program for this conference will be announced at a later time.

Washington Letter

(From a Special Correspondent)

Aug. 20, 1947.

Compton Says President Was Poorly Advised on Science Bill

Karl T. Compton, president of the Massachusetts Institute of Technology, declared President Truman was "poorly advised" in vetoing the National Science Foundation. Commented Dr. Compton "Practically every one agrees that the universities and colleges cannot contribute their part in meeting the postwar scientific needs of the country on their prewar basis of financial support. Every one knows that national security and prosperity require assiduous attention to science and the training of scientists. I believe the President was poorly advised in this action. I believe the value to the nation of getting the program going promptly outweighs the objections to the form of the bill, which could be corrected later, if in practice they proved serious."

Major General Hawley Expected to Head Veterans Administration

Major Gen. Paul R. Hawley, medical director of the Veterans Administration, is expected to succeed Gen. Omar N. Bradley as head of the Veterans Administration when Bradley reportedly will leave the agency in sixty days to became army chief of staff. He is now on a tour of army installations in Europe. Others mentioned are Major Gen. Lewis B. Hershey, former Selective Service chief, and Major Gen. Harry K. Vaughan, personal military aide to the president. As reasons for which Hawley is favored are his success in medicine and as an administrator under Bradley, his success as head of army medical service under combat conditions in Europe, his experience with enlisted men and veterans and reported presidential fears that General Vaughan's appointment might be opposed in the Senate by political opponents. Dr. Hawley is reported to be General Bradley's choice for the post.

European Women Visit Institute of Health

Among six European professional women who were guests at the National Institute of Health at Bethesda during a Washington stopover on their trip to the conference of the International Federation of University Women in Toronto were Miss Regine Aernouts, head pharmacist of St. Elizabeth Hospital, Antwerp, Belgium; Miss Tine Quist, pharmacist at Leiden University and Dr. Marguerite Steiger, chemist in a Zurich laboratory.

Coming Medical Meetings

American Academy of Ophthalmology and Otolaryngology, Chicago, Palmer House, Oct. 12-17. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Anti-Arthritis Association, Del Mar, Calif., Oct. 4-5. Dr. Robert T. Pottenger, 65 N. Madison Ave., Pasadena, Calif., Secretary.

American Association of Medical Record Librarians, New York, Hotel Commodore, Sept. 7-12. Mrs. Adaline Hayden, 18 E. Division St., Chicago, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 4-6. Dr. James R. Bloss, 418 Eleventh St., Huntington 1, W. Va., Secretary.

American Clinical and Climatological Association, Colorado Springs, Oct. 13-15. Dr. James Bordley III, Johns Hopkins Hospital, Baltimore 5, Secretary.

American College of Surgeons, New York, Waldorf-Astoria Hotel, Sept. 8-12. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2-6. Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr. Karl S. Richardson, 24 West Ohio St., Chicago, Business Manager.

American Hospital Association, St. Louis, Sept. 22-25. Mr. George P. Bugbee, 18 E. Division St., Chicago, Exec. Secretary.

American Public Health Association, Atlantic City, Oct. 6-10. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Central Neuropsychiatric Association, Galveston, Texas, Oct. 17-18. Dr. William C. Menninger, 3617 W. Sixth Ave., Topeka, Kans., Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 17-20. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Oct. 6-8. Mr. Theodore Wiprud, 1718 M Street N.W., Washington 6, Secretary.

International Cancer Research Congress, St. Louis, Hotel Jefferson, Sept. 2-7. Dr. Axel N. Arneson, 510 S. Kingshighway, St. Louis, Chairman Committee on Local Arrangements.

International College of Surgeons, U. S. Chapter, Chicago, Palmer House, Sept. 29-Oct. 2. Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

Kentucky State Medical Association, Louisville, Sept. 29-Oct. 2. Dr P. E. Blackerby, 620 S. Third St., Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept. 23-26. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Nevada State Medical Association, Reno, Sept. 4-6. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.

Oregon State Medical Society, Portland, Sept. 4-6. Dr. Thomas S. Saunders, 1020 S. W. Taylor St., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 15-18. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.

Southeastern Dermatological Association, Knoxville, Tenn., Hotel Andrew Johnson, Aug. 31. Dr. A. H. Lancaster, 608 W. Main Ave., Knoxville, Secretary.

Southern Psychiatric Association, Birmingham, Ala., Oct. 13-14. Dr. Newdigate M. Owensby, 384 Peachtree St. N.E., Atlanta, Ga., Secretary.

Utah State Medical Association, Salt Lake City, Sept. 11-13. Dr. Ray T. Woolsey, 316 Atlas Bldg., Salt Lake City 1, Secretary.

Vermont State Medical Society, Burlington, Hotel Vermont, Oct. 1-3. Dr. Theodore H. Harwood, 128 Merchants Row, Rutland, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 13-15. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond 19, Secretary.

Washington State Medical Association, Seattle, Olympic Hotel, Sept. 28-Oct. 1. Dr. Harold E. Nichols, 327 Cobb Building, Seattle, Secretary.

Western New York and Ontario Urological Society, Saranac, N. Y., Saranac Inn, Sept. 3-6. Dr. Albert M. Crance, 525 S. Main St., Geneva, N. Y., Secretary.

Wisconsin, State Medical Society of, Milwaukee, Oct. 6-8. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.

World Medical Association, Paris, France, Sept. 17-20. Dr. Charles Hill, B. M. A. House, Tavistock Sq., London, W. C. 1, England, and Dr. P. Cibrie, 60 boulevard de Latour-Maubourg, Paris 7e, France, Joint Secretaries.

Bureau of Information

LOCATION OF PHYSICIANS

Virginia Shuler
Chicago

This is the eighth of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

"Virginia has a very active Council on Health and Medical Care, which is supporting a program to be presented to the next session of the legislature, which will convene on Jan. 1, 1948. Some of the salient features of this program are the provision of state funds to match federal funds for the construction of medical facilities under the Hill-Burton Act—these funds to be applied where local areas cannot raise the matching amount; an increase in the amount of money ($800,000 on a matching basis) which was appropriated by the last legislature for the care of the indigent; demonstration and school health and education programs, which are already under way in five counties selected to represent average conditions in various sections of the state; study of prepayment plans as they apply to rural people; more beds for the care of open cases of tuberculosis, particularly of the infirmary type; provision and care for the mentally disabled. Recently the governor released a considerable sum of money for capital outlay and more adequate personnel for mental institutions. The question of making medical facilities available for doctors in rural sections is receiving intense study by several committees in the state. Of the utmost importance is the question of personnel. Efforts are being made to increase the salaries of the various personnel concerned in providing better health for the citizens of the state of Virginia. In order to do this it is realized that the state must increase its taxes so that they may take care of recurring obligations both in health and in education. This is a subject for discussion and debate at the present time, ultimately to be presented to the legislature. The council will formulate an overall program for health and medical care to extend over a period of years.

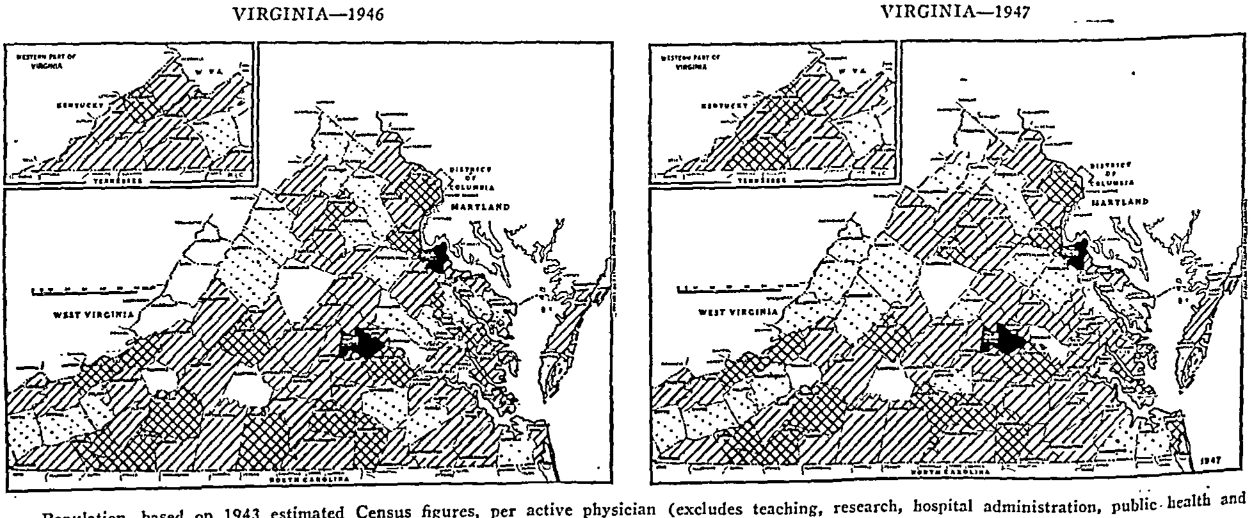
"The Committee on Rural Medical Service held a round table discussion at an institute on Rural Health at Virginia Polytechnic Institute in Blacksburg, Va., July 30. Approximately six hundred representatives of various farm organizations were present at this rural institute.

"It should be noted that the statistics regarding the distribution of doctors in Virginia may not be too accurate, but they definitely indicate a trend. Mr. Henry Johnson, director of public relations of the Medical Society of Virginia, is now conducting a survey with reference to the distribution at this time, and these figures will be available within the next few months."

H. B. MULHOLLAND, M.D., Chairman,
Virginia Council on Health and Medical Care,
University of Virginia Hospital, Charlottesville, Va.

Areas in Virginia Requesting General Practitioners

County	Town	Population
Accomack		33,030
Albemarle		44,052
	Esmont	500
Amelia		8,495
Appomattox		9,020
Bedford	Big Island	551
Botetourt		16,447
	Eagle Rock	600
	Troutsville	400
Carroll		25,904
Chesterfield		31,183
Culpepper		13,365
Essex		7,006
Floyd		11,967
Greene	Stanardsville	212
Halifax		41,271
Henrico		235,002
King William		7,855
	Mangohick	50
Louisa		13,665
Lunenburg		13,844
Madison	Madison	281
	Woodberry Forest	300
Mecklenburg		31,933
	Clarksville	826
Montgomery	Elliston	550
Nelson		16,241
Orange		12,649
Patrick		16,613
Powhatan		5,671
Roanoke		112,184
Shenandoah	New Market	629
Southhampton	Capron	291
	Newsoms	250
Surry	Dendron	465


VIRGINIA—1946

VIRGINIA—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

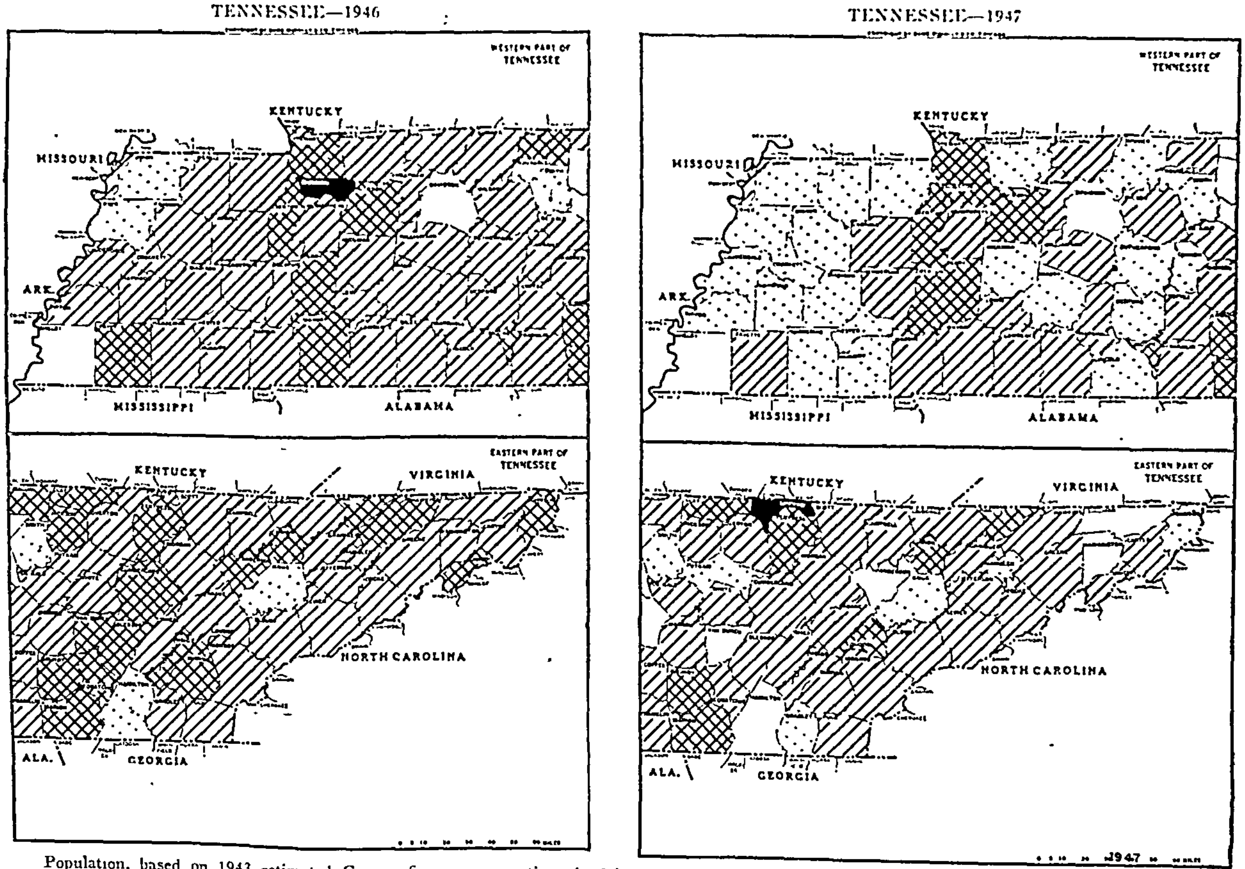
TENNESSEE

"Recent studies of distribution of physicians in Tennessee show that in metropolitan counties we have one physician for a little over one thousand population, while in other areas there are over nine thousand patients per physician. This disproportion is increased by the fact that the young doctors are in the metropolitan area, while many doctors are over 65 in the rural districts. These figures may justify the opinion of some that there is no shortage in the metropolitan districts and that steps should be taken to increase the number of doctors in the portions of the state where there is not only a lack of doctors but a deficiency in hospitals, educational, religious and cultural institutions."

W. M. Hardy, M.D., Secretary-Editor,
Tennessee State Medical Association,
510 Doctors Building, Nashville 3.

Areas in Tennessee Requesting General Practitioners

County	Town	Population	County	Town	Population
Bradley	Charleston	587	Lincoln	Petersburg	551
Hardeman	Whiteville	706	Monroe	Tellico Plains	899
Hickman	Centerville	1,030	Scott		15,966
Humphreys		12,421			
	Waverly	1,318			



TENNESSEE—1946

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NORTH CAROLINA

"We are well aware of the fact that North Carolina is now the eleventh most prosperous state in the union but is forty-second in the number of hospital beds per 1,000 population and forty-fifth in the number of doctors per 1,000 population.

"North Carolina has inaugurated a Hospital and Medical Care Program for the entire state with this noble objective as the goal—'The ultimate purpose of this program shall be that no person in North Carolina shall lack adequate hospital care or medical treatment by reason of poverty or low income.'

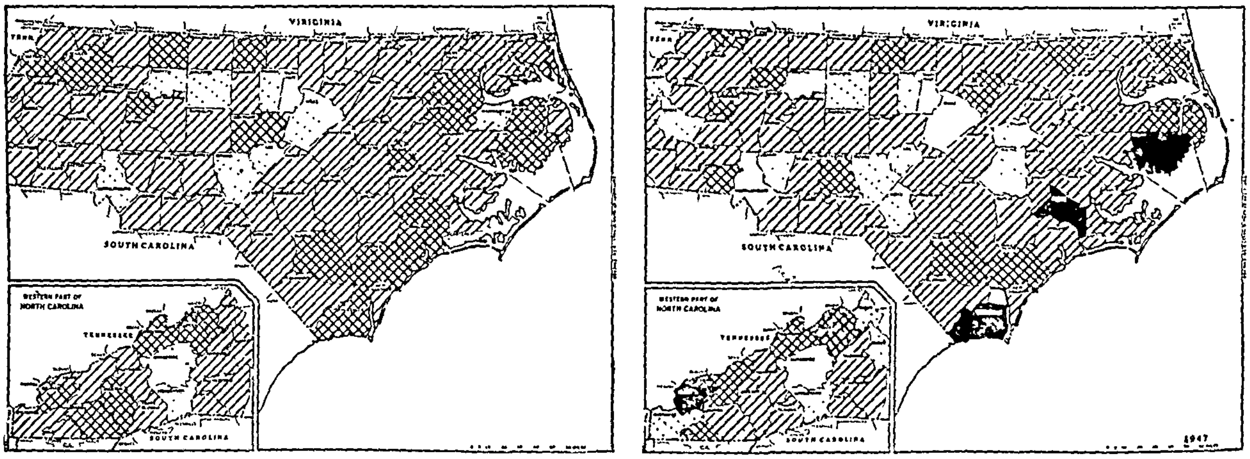
"The cities and small towns are adequately cared for; however, the rural areas in some sections of North Carolina are urgently in need of more physicians. At present rural North Carolina has only one doctor for each 3,613 people, and there is only one colored doctor for 6,916 colored people.

"With the state supported four-year medical school at the University of North Carolina with a 400-bed teaching hospital and a loan fund for medical students, and with medical training for negro youth, as well as grants made for the construction of new hospitals in areas not adequately served by existing hospital facilities, and the medical profession urgently insisting on voluntary insurance, we are confident that the statewide program in health and medical care will bring the state up to an average of four beds for every 1,000 population and one doctor for each 1,000 population. To this end, as quoted above, no person in North Carolina shall lack adequate hospital care or medical treatment by reason of poverty or low income."

Roscoe D. McMillan, M.D., Secretary,
Medical Society of the State of North Carolina,
P. O. Box 232, Red Springs, N. C.

Areas in North Carolina Requesting General Practitioners

County	Town	Population
Alleghany		8,341
Ashe		22,664
	Sturgills	50
Avery		13,561
Beaufort		36,431
Cabarrus	Midland	500
Caswell	Milton	329
Cherokee		18,813
Clay		6,405
	Hayesville	336
Columbus	Acme	195
Cumberland		59,320
	[illegible]	356
Dare		600
	[illegible] Island	2,500
Davidson	Denton	677
Edgecombe	Pinetops	713
Franklin	Louisburg	2,309
Gaston	Dallas	1,704
Graham		6,418
	Robbinsville	399
Johnston		63,798
Lincoln		24,187
Macon		15,880
Madison		22,522
	Hot Springs	773
Mecklenburg		151,826
Montgomery	Star	611
New Hanover		47,935
Onslow	Richlands	688
Pamlico		9,706
Person		25,029
[illegible]	Farmer	110
		76,860
	Lumberton (Negro physician)	5,803
[illegible]	Madison	1,683
		45,577
	Bostic	226
Stokes	Danbury	250
Swain		12,177
Union	Waxhaw	611
Wake		100,544
Warren		23,145
Watonga		18,114
Wayne	Seven Springs	170


NORTH CAROLINA—1946

NORTH CAROLINA—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

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WEST VIRGINIA

"The distribution of doctors in West Virginia on a population basis remains about the same, except for the more populous areas. The migration is still definitely toward the urban centers. With the return of nearly all of our doctors from military service, the situation in our industrial areas is somewhat relieved, although there is still a doctor shortage in the southern coal fields. There is still an acute shortage of medical care in our rural areas, although a few returning veterans have slightly improved the overall situation.

"It is thought that there will be a great improvement in medical care facilities when our hospital construction program gets under way. A survey is now being made for this purpose.

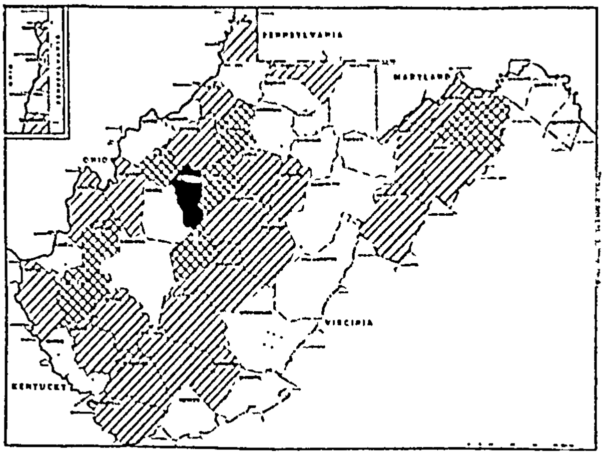
"A new division of mental hygiene has been activated in our state health department, from which much is expected in the future. Increased appropriations this year should improve conditions in our mental and tuberculosis institutions. We have two new active committees in the state medical association—the Committee on the Study of Diabetes and the Committee on Mental Hygiene."

Mr. Charles Lively, Executive Secretary,
West Virginia State Medical Association,
302 Atlas Building, Charleston, W. Va.

Areas in West Virginia Requesting General Practitioners

County	Town	Population
Boone		28,556
	Madison	1,205
Fayette	Oak Hill	3,213
Gilmer		12,046
Hampshire		12,974
Hardy	Wardensville	195
Lewis		22,271
Logan		67,768
	[illegible]	2,910
		5,739
		717
		1,239
McDowell	[illegible]	1,325
	Kimball	1,589
Monongalia	Morgantown	16,655
Monroe		13,577
Morgan	Paw Paw	990
Pocahontas		13,906
	Cass	597
Preston	Brandonville	113
Raleigh	[illegible]	814
		808
Randolph		30,259
Webster		18,080
	Webster Springs	1,133
Wetzel		22,342
Wirt	Elizabeth	685

WEST VIRGINIA—1946



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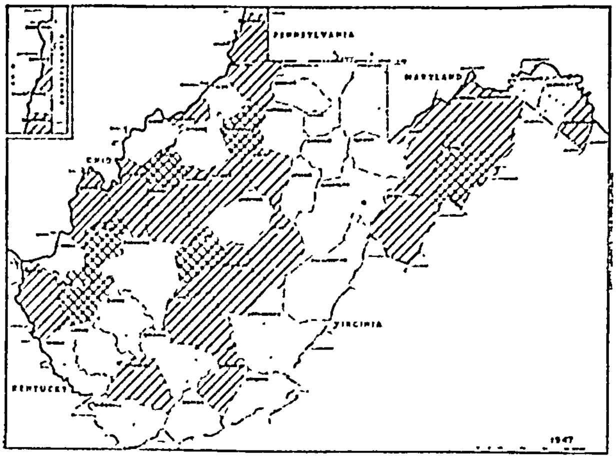

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MARYLAND and DELAWARE

Areas in Maryland Requesting General Practitioners

County	Town	Population
Baltimore City		859,100
Calvert		10,484
Caroline		17,549
Carroll		39,654
Charles		17,612
Frederick		57,312
	Brunswick	3,856
Garrett	Oakland	1,587
Howard		17,175
Kent	Chesterton	2,760
	Galena	250
	Millington	307
Saint Marys		14,626
Washington		68,838

W. H. Toulson, M.D., Secretary,
Medical and Chirurgical Faculty of Maryland,
1211 Cathedral Street, Baltimore 1.

Area in Delaware Requesting General Practitioner

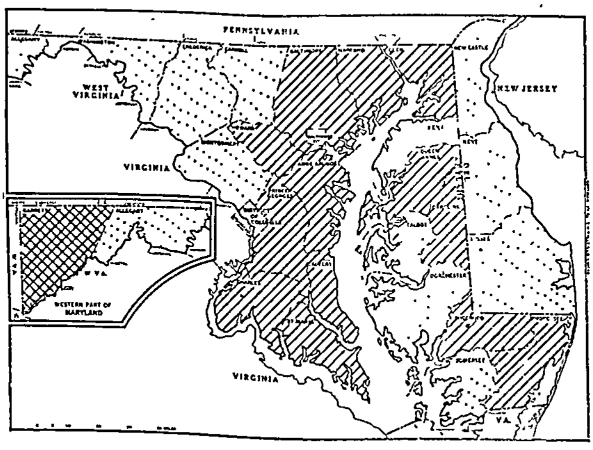
County	Town	Population
Sussex	Milton	3,000

C. L. Munson, M.D., Secretary,
Medical Society of Delaware,
1005 Jefferson Street, Wilmington, Del.

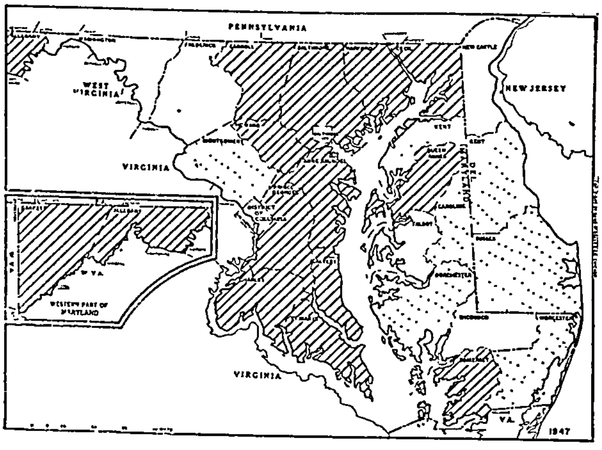
No areas in the District of Columbia requesting general practitioners.

Mr. Theodore Wiprud, Secretary,
Medical Society of the District of Columbia,
1718 M Street N.W., Washington 6, D. C.

MARYLAND AND DELAWARE—1946



MARYLAND AND DELAWARE—1947



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GOVERNMENT SERVICES

ARMY

DOCTORS TO GET EXTRA $100 A MONTH

The Surgeon General announces that effective September 1 an additional $100 a month will be paid to all Regular Army Medical and Dental Corps officers as well as other officers serving voluntarily on extended active duty in these corps. This addition to the income of these officers is regarded by the War Department "as an equalization measure designed to bring the incomes of Medical and Dental Corps officers more nearly in line with those of civilian doctors and dentists." Surgeon General Bliss explained that the additional compensation will aid in reimbursing these officers for the costs of their professional education and for their loss of earnings while in medical or dental school.

The Army will also follow a new policy of commissioning selected doctors and dentists in the Regular Army in grades as high as colonel, depending on their age and professional qualifications. The measure authorizing such appointment also provides for such officers to be credited, for purposes of promotion, with the minimum number of years of service "now or hereafter required for promotion of officers of the Medical and Dental Corps to the grade in which appointed."

These important changes in the Army's medical program were made possible by legislation signed by President Truman August 5. This measure is in the form of an amendment to the Pay Readjustment Act of 1942.

General Bliss said the $100 increase in compensation will benefit not only Regular Army medical and dental officers but also Reserve, National Guard and Army of the United States Officers. Former students of the Army Specialized Training Program who are required to serve on extended active duty are eligible for this increase in compensation when they apply for and are accepted into the Regular Army. The enabling legislation limits the duration of these benefits to thirty years of active service. The extra $100 monthly compensation will be paid not only to officers who are on extended active duty as of September 1, the effective date of the legislation, but to all eligible Medical and Dental Corps officers who are commissioned in the Regular Army or who volunteer for extended active duty within the next five years.

MEDICAL SERVICE CORPS CREATED

A change in the permanent organization of the Medical Department of the Army went into effect August 5 following the President's approval of legislation creating a Medical Service Corps in the regular establishment. This legislation makes it possible for the first time to give Regular Army commissions to specialists in fields closely allied to medicine—to bacteriologists, entomologists, psychologists, sanitary engineers, pharmacists, chemists, electronics experts and the like. These will be grouped together in a new corps under the Medical Department of the Army. Previously the Medical Department was made up of six corps—Medical, Dental, Veterinary, Pharmacy, Nurse and Women's Medical Specialists. It has been possible to commission specialists in other fields only in the reserve, from which they could be called to service in a national emergency.

It became evident during the two world wars, with the new ramifications of medical science, that greater reliance must be placed on these other specialists. They could relieve the Army Medical Corps, in which only physicians can hold commissions, of a great deal of clinical laboratory and sanitary engineering activities, psychiatric social work and clinical psychology, pharmacy, supply and hospital administration, certain phases of training and field medical service, and in certain fields of research requiring specialized skills and training.

During World War I, half the commissioned personnel of the Medical Department were physicians. In the last war this percentage had fallen to about one third, with the difference taken up largely by specialists in fields allied to medicine. This is bound to constitute more and more the situation in the future as the ramifications of medicine extend into other sciences and new problems arise. It is impossible to predict what kind of a specialist will be needed tomorrow.

Under the present legislation the Surgeon General may use his discretion, as the need arises. An expert in enzyme chemistry, for example, can be given a regular commission in the new Medical Service Corps with no more complications than would be involved in commissioning a brain surgeon in the Medical Corps. The strength of the new corps will be prescribed by the Secretary of War. Grades will range from second lieutenant to colonel.

THE ARMY'S HYDROPONIC GARDENS

The Army is producing fresh vegetables for use with the ration in overseas installations in large quantities by the hydroponic method of gardening. Hydroponic gardens are being operated in places where transportation does not permit shipping fresh vegetables and where there is an inadequate rainfall, a lack of suitable soil or other difficulties which preclude growing vegetables in the ground. Hydroponic gardens are being operated on Iwo Jima, Atkinson Field in British Guiana, at Nanking, China, and in Japan. The garden at Chofu near Tokyo comprises 55 acres and the one at Otsu 25 acres. These are probably the largest and most productive gardens of their kind in the world. The hydroponic gardening method consists in using beds of gravel, stones or cinders or other inert materials for growing vegetables, supplying them with water and the necessary nutrient chemicals for their growth. The cost of producing vegetables by this method is low in comparison with the cost of transporting vegetables by refrigerator transportation over very long distances. The gardens now in use are expected to produce during the present growing season 2,000,000 pounds of tomatoes, 440,000 pounds of cucumbers, 310,000 pounds of lettuce, 200,000 pounds of radishes, 170,000 pounds of onions and 60,000 pounds of pepper, or sufficient to provide eight salad meals a week for 100,000 military personnel and their dependents.

Here is a representative list of chemicals of fertilizer grade comprising the nutrient solution in hydroponic gardening:

Potassium nitrate	19.8%
Potassium sulfate	17.9%
Calcium sulfate	27.3%
Magnesium sulfate	18.7%
Monocalcium phosphate	11.2%
Ammonium sulfate	5.1%
	100.0%

Also required in minute quantities are ferrous sulfate, ferric ammonium citrate, manganese sulfate, manganese chloride, boric acid, borax sodium tetraborate, copper sulfate and zinc sulfate.

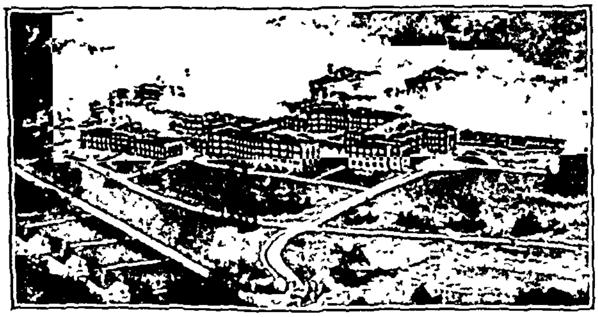
A ten bed garden unit, occupying about half an acre of land, is capable of producing enough to serve four hundred men a salad a day.

The origin of hydroponics dates back to 1699, when crude experiments were conducted. In 1925 a number of universities took up research on its possible commercial application, but the lack of specially trained operators hampered its expansion. In 1944 Gen. H. H. Arnold of the Army Air Forces observed the hydroponic activities at the Convalescent Hospital, Coral Gables, Fla., in connection with the rehabilitation program, and he secured skilled and competent authorities to develop a program for supplying the air forces with fresh fruits and vegetables from hydroponic gardens. The Air Forces withdrew from this activity in 1946 and the Quartermaster Corps was authorized to take it up and establish new gardens where certain conditions existed. A school of instruction in this work was opened in Japan in 1946 and was attended by 3 Ph.D.'s and 61 men with degrees in agriculture. This method may develop on a large scale in Japan, where less than 17 per cent of the land is sufficiently fertile to grow vegetables. The arable soil too is contaminated because of the long custom of using night soil as fertilizer. Soil-grown vegetables are not served to U. S. troops there without being cooked, on account of the danger of contracting amebic dysentery.

VETERANS ADMINISTRATION

TUBERCULOSIS HOSPITAL AT OTEEN

The 1,000 bed hospital at Oteen, N. C, built as an army general hospital during World War I was subsequently transferred to the U. S. Public Health Service and later to the Veterans Administration, which is using this facility as a tuberculosis hospital. The original army buildings have been replaced by permanent structures. It is 6 miles from Asheville in the Smoky Mountains National Park and on the eastern approach is the reservation of the Eastern band of Cherokee Indians, 3,000 of whom still follow their tribal customs and crafts.



Tuberculosis Hospital at Oteen, N. C.

Five resident physicians are training in thoracic surgery at the Veterans Administration Hospital, Oteen, N. C., where such a training program has been in effect since February. Nearly twenty other young doctors are training in other fields, while a class of cadet nurses has just completed a six months course in general nursing.

The resident physicians in training are young doctors who have completed the Army Student Training Program and the Navy V-12 courses and are now on loan from the Army and Navy to the Veterans Administration. Besides thoracic surgery, training is being given also in the diagnosis, care, treatment and rehabilitation of tuberculous veterans.

The Veterans Administration is in need of nurses for tuberculosis hospitals, and a training center has been established at the Oteen hospital for graduate and senior cadet nurses who desire to specialize in this kind of work. The salaries range from $2,644 to $6,000. Applications should be submitted to the Veterans Administration branch office having jurisdiction over the territory where nurses desire to work.

ADDITIONS TO THE STAFF

The chief medical director has announced the addition to the staff of the Veterans Administration department of medicine and surgery in Washington, D. C., of Dr. George M. Lyon, Huntington, W. Va., Dr. Louis G. Welt, Willimantic, Conn., and Dr. Earl A. Martin, a native of Ohio.

Dr. Lyon, who will develop laboratories for the use of radioactive isotopes in treatment of veteran patients, from 1936 to 1942 was a member of the joint committee on health problems on education of the American Medical Association and the National Education Association. He served during World War II as chemical warfare officer for the naval forces in Europe and later was safety adviser for the staff of the commander of the joint Army-Navy Task Force No. I. Dr. Welt will engage in research projects for the Research and Education Service of the Veterans Administration department of medicine and surgery. He is certified by the American Board of Internal Medicine and during World War II served with the 39th General Hospital in malaria control work and later in the office of the chief surgeon, general headquarters, AFPAC, and was editor of the *Journal of Military Medicine in the Pacific.* Dr. Martin has been appointed associate member of the Board of Veterans Appeals. He was commissioned in the Army Medical Corps in 1944 and assigned to the Veterans Administration, where he has been on duty since 1941. Formerly he was chief of the diagnostic center at the Veterans Administration Facility at Hines, near Chicago.

Dr. Gert Heilbrunn, former assistant clinical professor of psychiatry, University of Illinois College of Medicine, Chicago, has been appointed chief of the neuropsychiatric section of the Northwest Branch of the Veterans Administration, with headquarters in Seattle, where he also plans, it is reported, to enter private practice. Dr. Heilbrunn is a graduate of the University of Berne, Switzerland.

MISCELLANEOUS

SALE OF SURPLUS GOVERNMENT PROPERTY

The War Assets Administration Regional Office, 728 15th Street, Denver 2, is conducting a sale of pharmaceuticals, chemicals and drugs. Physicians who are veterans have certain priorities in the purchase of this government property. The sale closes August 25.

EXAMINATIONS FOR POSITION AS OCCUPATIONAL THERAPIST

The U. S. Civil Service Commission announces an examination for probational appointment to the position of occupational-therapist with salaries ranging from $2,644 to $5,905 a year for service in Veterans Administration hospitals and regional and branch offices throughout the United States. One position is open in the central office of the Veterans Administration in Washington, D. C. Applicants must be graduates of schools of occupational therapy approved by the American Medical Association or, in case of graduation prior to 1938, by the American Occupational Therapy Association, and must have certain other qualifications. Applications must be filed in the various Veterans Administration branch offices throughout the country not later than August 12.

PLACEMENT OF BLIND CIVILIANS

The Office of Vocational Rehabilitation conducted a training institute in Washington late in June to stimulate commercial placement of blind civilians. In attendance were employment specialists from eighteen state vocational rehabilitation agencies who received instruction in public relations, design and layout of equipment, merchandising, advertising and other subjects related to the program of helping the blind undertake business enterprises. On completion of the short course in training, the state representatives returned to their home states to give further help in preparing eligible blind persons to engage in small business enterprises successfully.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Blake, Thomas M.	Sheffield
Lowe, James C.	Florence
McPherson, George Jr.	Demopolis
Moody, Maxwell Jr.	Tuscaloosa
Savage, Charles H. Jr.	Crichton

Arizona

dosRemedios, Leonardo V.	Phoenix
McWhirt, Willis E.	Tucson

California

Bormann, Edwin L.	San Diego
Bourdeau, Maynard S.	Glendale
Brown, Don C.	Los Angeles
Buffum, Robert L.	Long Beach
Davis, Gerald E.	San Jose
Diamond, Abraham J.	Los Angeles
Erler, Theodore G. Jr.	San Francisco
Fiske, David	Berkeley
Haymaker, Webb E.	San Francisco
Hoffman, Malcolm E.	Berkeley
Prigge, Edward K.	Los Angeles
Steel, Lowell F.	Chico
Walters, Richard D.	Fullerton
West, Ernest J.	San Jose

Connecticut

DiGiandomenico, Albert T.	Middletown
Eckert, George R.	Danbury
Harrison, William Jr.	Derby
Mendillo, John J.	Hamden
Mongillo, Frank	New Haven

Florida

Carlton, Leffie M. Jr.	Wauchula
Mitchell, George A.	Miami
Young, Robert W.	Daytona Beach

Idaho

Derring, Raymond E.	Grangeville
Finley, John W.	Lewiston
Galloway, Augustus F.	Weiser
Kircher, James R.	Preston

Illinois

Brown, Mercer T.	Zion
Brown, Ralph G.	Winnetka
Bullock, Norman C.	Rockford
Burdon, Stephen B.	Lowpoint
Colangelo, Cornelius C.	Chicago
Dinolt, Robert	Chicago
Doretti, Peter J.	Chicago
Harrison, Rollie M.	Chicago
Jablonowski, Alexander J.	Chicago
Kaye, Jerome J.	Oak Park
Monroe, John W.	Benton
Paul, Jerome T.	Evanston
Pfister, Peter C. W.	Chicago
Rock, Frederick	Chicago
Rubert, Samuel R.	Chicago
Shaffer, James M.	Evanston
Slusser, Gerald A.	Villa Grove

Indiana

Hasler, Norman B.	Worthington
Kelley, Clement E. Jr.	Indianapolis
Kennedy, Julien C.	Indianapolis
Peck, James F.	Princeton
Russell, O. Raymond	Frankton
Salassa, Robert M.	Indianapolis
Warren, John C.	Indianapolis
Warren, Ward B.	Marshall
Witham, Robert L.	Indianapolis

Iowa

Brewster, Edward S.	Boone
Cauldwell, Earl W.	Oskaloosa
Ely, George B.	Iowa City
Langford, William R.	Epworth
Moore, Gage C.	Ottumwa
Pohl, Donald E.	Council Bluffs
Schrader, Merlin A.	Webster City

Kansas

Brown, Robert O.	Kansas City
Claybourn, Norman L.	Kansas City
Greenhouse, Abraham C.	Leavenworth
Savory, John H.	Atchison
Van Deventer, Roy W.	Wellington

Kentucky

Durham, William C.	Central City
Glanton, James B.	Georgetown
Hulett, Paul M.	Louisville
McAllister, Roy S.	Shelbyville
Minish, Lawrence T. Jr.	Louisville
Pfister, Howard F. C.	Fort Thomas
Rosenbaum, Harold D.	Fairplay

Louisiana

Dileo, Samuel J.	New Orleans
Durham, Thomas M. Jr.	Alexandria
Ferris, Harold A. Jr.	New Orleans
Johnson, Philip B.	New Orleans
LaRocca, Henry A.	Algiers
Sabatier, Harold J.	Elton

Maryland

Bryson, William J.	Catonsville
Cox, Matthew M.	Sparrows Point
Day, Edward C.	Baltimore
Hollander, David H.	Baltimore
Kauffmann, William P.	Silver Spring
King, Joseph D. B.	Baltimore
McClafferty, William J.	Baltimore
Siver, Robert H.	Cockeysville

Massachusetts

Burnett, Joshua B.	Newtonville
Herter, Frederic P.	Milis
Lareau, Henry R.	Malboro
Lawlor, Edward F.	Lawrence
Lawrence, Bradford W.	W. Somerville
Leary, John E.	Springfield
Ralston, Richard M.	East Weymouth
Walker, Thomas	Andover

Michigan

Bovill, John C.	Dearborn
Caven, Hugh J.	Detroit
Lenz, Charles R.	Jackson
Monson, Robert C.	Detroit
Zarzecki, Casimer A.	Grand Rapids
Zick, Luther H.	Albion

Minnesota

Chalgren, William S.	Minneapolis
Nay, Richard M.	Rochester
Sanderson, Oscar M.	Minneapolis
Segal, Martin A.	Minneapolis
Warren, Cecil A.	St. Paul

Mississippi

Beard, John C. Jr.	Money
Busby, William Jr.	Hattiesburg
Holleman, Jeremiah H.	Pickens
McCarthy, Carroll E.	Baldwyn
Tillman, Clifford	Natchez

Missouri

Fellhauer, Carl M.	St. Louis
Goldman, Stanley L.	Kansas City
Hess, Paul D.	Kansas City
Martin, John N.	Unionville
Reilly, Terence M.	St. Louis
Viscofsky, Jack	Kansas City

Montana

Craft, Charles B.	Bozeman

Nebraska

Brown, R.	Beatrice
Cashen, Russell M.	Lincoln
Christie, David P.	Omaha
Peters, Roy M.	Omaha
Warner, George W.	York

New Jersey

Berg, Samuel	Newark
Bibighaus, Warren Y.	Collingwood
Donnelly, John H.	Newark
Holaday, Duncan A.	Highland Park

New Mexico

Ellis, Herbert B. Jr.	Raton
Pate, Rupert H.	Lake Arthur

New York

Bauer, Laszlo	Jackson Heights
Bax, Alphonso L.	Niagara Falls
Concannon, Joseph P.	Little Neck, L. I.
Fiore, Peter P.	Brooklyn
Fishman, Alfred P.	Brooklyn
Norton, Gilbert C.	New York
Ormandy, Laszlo	New York
Sausville, Albert J.	Brooklyn
Savage, Eric D.	Tarrytown
Scharfman, Ephraim	Brooklyn
Van Sciver, Alan E.	Larchmont
Vetromile, Gerard A.	Merrick, L. I.
Vournas, Christopher G.	Brooklyn
Warner, Robert	Buffalo
Way, Howard S. Jr.	New York
Whittlesey, William N.	New York

North Carolina

Cordice, John W. V.	Durham
Corpening, William N.	Granite Falls
Davis, William H. Jr.	Durham
Garber, Edgar C. Jr.	Greensboro
Hart, Lillard F.	Winston-Salem
Hoggard, William A. Jr.	Hertford
Shields, Daniel R. Jr.	Gastonia
Swain, Wingate E.	Shallotte
Toney, Ellis E. Jr.	Oxford
Wadsworth, Joseph A. C.	Durham
Wallace, Winter C.	Rutherfordton

Ohio

Alter, Albert J.	Toledo
Balz, Frederic F.	Columbus
Barrett, Raymond J.	Akron
Barson, Lloyd J.	Van Wert
Brust, Albert A. Jr.	Chillicothe
Eckert, Joseph J.	Akron
Edmonds, Kendrick T.	West Alexandria
Fauster, John U. Jr.	Defiance
Goldberg, Lawrence I.	Youngstown
Hyde, Burton E. L.	Troy
Jackson, James F.	East Liverpool
Juler, Edward T.	Cincinnati
McGlew, James A.	Youngstown
Maxwell, Thomas B.	Mansfield
Preuss, Fred S.	Cleveland
Scanlon, Charles P.	Cleveland
Scarnecchia, John L.	Youngstown
Schall, Sydney	Toledo
Thomas, Maurice C.	Dayton
Urich, Raoul W.	Elyria
Viktoryn, John W.	Cleveland
Warner, Calvin F.	Cincinnati
Wehling, Benjamin B.	Barberton

Virginia

Devine, John W. Jr.	Lynchburg
Harrington, Roberts H.	Marion
Hooten, William S.	Lynchburg
Law, Maynard H.	Roanoke
Warren, Allan B. Jr.	Orange
White, John W.	Arlington

West Virginia

Boggs, William C.	Wheeling
Harvey, Harold N.	Institute
Hines, Brainard E.	Charleston
Wood, Robert C.	Lewisburg

Wyoming

Lewis, Ray B.	Kemmerer

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Health Officer Retires to Take Up Private Practice.—Dr. Peter J. Cuneo retired as health officer of the city of Bakersfield after nearly thirty-two years of service to devote his time to private practice, when the public activities in Bakersfield were placed under the Kern County Health Department, April 3.

Plague Infection.—First reports of plague from specimens of rodents or their ectoparasites for this year were reported by the Bureau of Vector Control in June. In Monterey County plague was found in fleas from captured rodents in two locations south of the city of Monterey, and in Lassen County plague was traced to fleas and lice from rodents captured in Nubieber and to fleas from rodents south of Adin.

Course in Psychiatry and Neurology.—The Langley Porter Clinic, the Medical Center, San Francisco, will offer a twelve weeks course in psychiatry and neurology beginning September 8. Courses will be given by the Division of Psychiatry, University of California Medical School, Berkeley-San Francisco, in cooperation with the University Extension Division. Hours will be from Monday to Friday, 9 a. m. to 5 p. m., with work on Saturdays, 8 to 10 a. m. Registration is limited to 60 persons.

Committee to Make Cancer Survey.—The Cancer Committee of the San Francisco County Medical Society is undertaking a survey of the cancer control program. The general purposes are (1) to gather and present significant and statistical epidemiologic data and suggest ways in which more information can be secured, (2) to determine educational activities being conducted and how they can be expanded, (3) to obtain information on present diagnostic and treatment services and (4) to coordinate the resources for cancer control. The survey will be under the direction of Dr. Lester Breslow of the California Department of Public Health.

CONNECTICUT

Personal.—Dr. Louis G. Welt, clinical instructor of medicine at Yale University School of Medicine, New Haven, has been appointed to a medical research post with the Veterans Administration, Washington, D. C. Dr. Walt received his medical degree at Yale University School of Medicine, 1938, and has practiced medicine in Connecticut since 1939.

Annual Clinical Congress.—Dr. Francis G. Blake, dean of the Yale University School of Medicine, New Haven, and chairman of the Committee on the Clinical Congress of the Connecticut State Medical Society, has announced that the 1947 congress will be held in New Haven on September 16-18. Members of the committee, all of New Haven, include Drs. Gerbert E. Thoms, Arthur J. Geiger, Courtney C. Bishop, Harry B. Shumacker Jr., Hugh M. Wilson, Frederick C. Redlich, William R. Wilson and Daniel C. Darrow.

ILLINOIS

Narcotic Violation.—The Treasury Department, Bureau of Narcotics, advises that Dr. Arthur W. LoVene, Oquawka, pleaded guilty at Springfield to violation of the Federal Narcotic Act, and on July 25 was sentenced to a term of thirty days.

Improved Water Supplies.—The state sanitary water board has approved plans for the installation of new or improved water systems in nine Illinois communities, at Cambria, Nauvoo, Normal, East St. Louis, Neponset, Creal Springs, Wayne City, Tolono and Riverside.

Open Cancer Diagnostic Clinic.—A new state aided cancer diagnostic clinic was opened this month at Graham Hospital, Canton, under the direction of Drs. David A. Bennett, Roy L. Patterson, Marcos A. Quinones and Roderick H. Maguire, all of Clinton. Clinic sessions, beginning at 10 a. m., are scheduled for the first Thursday following the first Monday of each month.

New Building for Keeley Institute.—A new $500,000 hospital building for the treatment of alcoholic addicts will be built on a 20 acre site at Dwight, Ill., for the 68 year old Keeley Institute. The building will accommodate 75 more patients, which will include women, up to this time excluded. It will have 84 rooms, dining facilities for 130, treatment rooms and administrative offices.

Competitive Examination for Health Officers.—The Illinois Department of Public Health announces a competitive examination for health officers which will be held in Chicago on October 27. This examination is being held for the purpose of obtaining a list of eligible persons from which the Board of Health of the Champaign-Urbana Health District, Champaign, and the Stickney Health District, Cook County, may select health officers. These positions will carry salaries of about $7,000 a year. Admission to the examination will be limited to persons having training and/or experience in the public health field. For information write to Roland R. Cross, M.D., Director, Illinois Department of Public Health, Springfield.

Chicago

Open the Exhibit on Growth.—"The Miracle of Growth," an exhibit of growth and development of the individual from conception through adolescence, was unveiled at the Museum of Science and Industry in Jackson Park, August 6. The exhibit, produced by the department of medical and dental illustration of the Chicago Professional Colleges of the University of Illinois, was presented to the museum by Dr. George D. Stoddard, president of the university. The display represents an extensive experiment in visual education. Physical, mental and psychologic growth of the normal individual are portrayed. A transparent pregnant woman is the central figure of the display. The story of growth is revealed in the thirteen wall cases showing the growth of the child through adolescence. The principles of heredity are discussed in a series of electrically controlled questionnaires. The official opening of the exhibit climaxes more than two and a half years of planning, development and construction by Professor Thomas S. Jones and his staff.

Dr. Kendell to Head Department of Physical Medicine.—Dr. Herbert W. Kendell, Chicago, former medical director of the Chicago Intensive Treatment Center, has been named head of the department of physical medicine at the University of Illinois. The department, established last year, represents a combination of the departments of physical therapy and occupational therapy. Dr. Kendell has just completed a Baruch fellowship for graduate study in physical medicine at the Mayo Clinic, Rochester, Minn., and at the Massachusetts Institute of Technology, Boston. After graduating at the University of Cincinnati Medical School in 1933 he joined the staff of Miami Valley Hospital, Dayton, where six years later he became head of the department of physical medicine. Later he became medical director of the Chicago Intensive Treatment Center, U. S. Public Health Service. In 1944-1945 he was an associate professor in the department of physical medicine at Northwestern University and also served as medical director of the State Fever Therapy unit and Brookhaven Medical Center at Brookhaven, Miss. He is president-elect of the American Congress of Physical Medicine.

MARYLAND

Dr. Sadusk Appointed Associate Medical Director.—Dr. Joseph F. Sadusk Jr., Baltimore, has been appointed to the home office staff of the Prudential Insurance Company of America as associate medical director. A graduate of Johns Hopkins University School of Medicine, Baltimore, 1935, he was an instructor in medicine at Yale University from 1939 to 1942 and returned to Yale in 1946 as assistant professor of medicine. He served in the U. S. medical corps, 1942-1946, and was discharged with the rank of colonel. During his war service he was the executive officer of the United States of America Typhus Commission, which awarded him the Typhus Commission Medal.

MASSACHUSETTS

Dr. C. Guy Lane Becomes Professor Emeritus.—Dr. C. Guy Lane, Boston, chief of the dermatologic service, Massachusetts General Hospital, Boston, since 1936 retired June 1 and will devote his entire time to private practice. A graduate of Harvard Medical School, Boston, 1908, Dr. Lane joined the dermatology department in September 1919, following postgraduate training in New York and service in World War I. In 1928 he was appointed dermatologist to the hospital. In 1943 he continued his work beyond the hospital retirement age because of war emergency. He was instrumental in the formation of the American Board of Dermatology and Syphilology and served many years as its secretary. Dr. Lane has been appointed emeritus professor of dermatology at Harvard Medical School, where he has been teaching since 1925.

MICHIGAN

Community Honors Veteran Doctor.—About 400 physicians in central Michigan, patients and friends of Dr. Bert C. Hall, Pompeii, attended a dinner in celebration of his half century as a county physician July 6. A scroll from the Gratiot-Isabella-Clare counties medical association was presented to Dr. Hall, along with other gifts.

Impostor Put on Probation.—Recorder's Judge George Murphy, Detroit, July 14, placed Theodore H. Cole, 23, of 89 Canfield Avenue East, Detroit, on a year's probation for practicing medicine without a license. Cole, a student at Cass Technical High School, admitted prescribing for a score of patients and participating in an appendectomy. During the war he said he had served in the Army Medical Corps.

New Director of Kimball Sanatorium.—Dr. Arthur S. Kimball, Pontiac, on August 1 took over the directorship of the Arthur S. Kimball Sanatorium, Battle Creek, Calhoun County tuberculosis hospital named in honor of his father. He succeeds Dr. W. Leonard Howard, Battle Creek, who resigned to become head of Maybury Sanatorium at Northville. A graduate of McGill University Faculty of Medicine, Montreal, in 1939, he has been medical director of the Oakland County Tuberculosis Sanatorium at Pontiac.

Rural Health Conference.—The Michigan Rural Health Conference will be held at Snyder Hall and the Fairchild Theater, Michigan State College, East Lansing, September 18-19, sponsored by the Michigan State and Ingham County medical societies and twenty-five other state health, rural and educational organizations. Section meetings will be held for discussions of (1) Hospital Facilities and Health Centers, (2) Bringing and Holding Physicians in Rural Areas, (3) Financing Personal Health and (4) Nursing and Ancillary Needs of Rural Communities.

Personals.—Dr. M. William Clift, Flint, chief of radiology at Hurley Hospital since 1932, became radiologist at Midland Hospital July 1. He has served as radiologist in Receiving, Wyndotte and Shirley hospitals, Detroit, and was an associate professor at Detroit Medical College.——Dr. Frederick H. Shillito, formerly of Kalamazoo, Mich., and now medical director for Pan American Airways' transatlantic division, made the inaugural flight of Pan American's commercial round the world service last month.

MINNESOTA

Dr. Helmholz Honored.—*At the recent International* Congress of Pediatrics in New York, several Latin American countries honored Dr. Henry F. Helmholz, professor of pediatrics, Mayo Foundation, University of Minnesota. Dr. Helmholz was awarded certificates of honorary membership in the Latin American Division of the American Academy of Pediatrics and in the Sociedade Brasileira de Pediatrics. He also was decorated in the National Order of Merit of Carlos J. Finlay in the grade of Commander from the Cuban government in recognition of his services in furthering pediatric practice in Latin American countries.

NEVADA

State Medical Meeting at Reno.—The Nevada State Medical Association will hold its annual meeting September 5-6 at the State Building, Reno, under the presidency of Dr. John A. Fuller, Reno. Out of state speakers will be:

Dr. Jack M. Farris, Los Angeles, Vagus Resection and Peptic Ulcer.
Dr. Edwin A. Lawrence, Salt Lake City, Surgery of the Diseases of the Chest.
Dr. Verne T. Inman, San Francisco, Anatomicophysiologic Problems Associated with Poliomyelitis.
Dr. Herbert H. Darling, San Francisco, Discussion of Veterans' Problems.
Dr. Earl R. Miller, San Francisco, Isotopes and the Effect of Radioactive Iodine on Thyroid.
Dr. Samuel H. Hurwitz, San Francisco, Allergy in General Practice.
Dr. David O. Harrington, San Francisco, Radiation Therapy in Ophthalmology.

NEW JERSEY

Dr. O'Crowley Receives Award.—At the June meeting of the Academy of Medicine in northern New Jersey, Dr. Clarence R. O'Crowley, Newark, N. J., received the Edward J. Ill award. On the plaque presented to him he was designated as "scholarly urologist, resourceful executive, forceful citizen." Dr. O'Crowley is a graduate of the Columbia University College of Physicians and Surgeons, New York, 1904. He is on the staff of various hospitals as a consultant urologist and is a past president of the American Urological Association, the New York Urological Society and the American Association of Genito-Urinary Surgeons and professor of urology in the Graduate School of the University of Pennsylvania. He is now on the editorial board of the *American Journal of Surgery.*

NEW YORK

New Wings and Other Buildings.—Nassau County's Meadowbrook Hospital, Hempstead, will construct two new wings and other new buildings and expand existing facilities in a building program to cost $6,200,000. The program will give the institution 615 beds, more than double its present capacity, and will furnish quarters for 300 nurses, a 65 car garage, enlarged kitchen and operating facilities, and a medical examiner's laboratory and office.

Personal.—Dr. Nelson W. Strohm, Buffalo, has been appointed full time director of Tuberculosis Control in the Buffalo Department of Health. He has been associated with the chest clinic of the Division of Communicable Diseases of the Buffalo Health Department since 1919, and since February 1 of this year has been chief of the diagnostic clinic of the health department. He is a graduate of the University of Buffalo School of Medicine and an associate in medicine on the faculty.

Illegal Practitioners Convicted.—The Medical Society of the County of Erie reported in its July Bulletin that a New York County jury on June 26 convicted two persons who represented themselves as chiropractors, under the sections of the state education law which prohibit the practice of medicine by any one who does not possess a registered license in medicine. The defendants, Michael and Kathryn Scallon, had treated or attempted to treat a 16 year old girl, who later died of tuberculosis, by means of chiropractic adjustments.

New York City

Course in Manipulative Surgery.—Columbia University College of Physicians and Surgeons will offer from 9 a. m. to 5 p. m., September 8-11, a concentrated course in manipulative surgery at the Columbia Presbyterian Medical Center by Dr. James B. Mennell, St. Thomas Hospital of London and Oxford University.

City Tuberculosis and Health Association.—Dr. Herbert R. Edwards, director of the Bureau of Tuberculosis, New York City Department of Health, has been appointed executive director of the New York City Tuberculosis and Health Association. He will succeed Frank Kiernan September 1. Dr. Edwards is a past secretary of the National Tuberculosis Association. He has served in the departments of health of Virginia, Connecticut and New York City, with which he has been associated since 1934.

The Salmon Lecture.—Harold D. Lasswell, Ph.D., Washington, D. C., has been elected to deliver the Salmon lectures for 1947, sponsored by the Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine. His lectures on "The Dynamics of Power and Personality" will be delivered on Wednesday, Thursday and Friday evenings, November 12-14, at the Academy of Medicine. Dr. Lasswell, professor of law, Yale University, is a consultant of the department of state, and since 1939 he has been director of the war communications research. Each year the Salmon Committee selects a lecturer who it deems has made the greatest contribution to his particular field during the preceding year. The chairman of the committee is Dr. C. Charles Burlingame, psychiatrist, Hartford, Conn.

Teaching Affiliation with St. Luke's Hospital.—Columbia University and St. Luke's Hospital announced July 19 an affiliation effective immediately for the teaching of medical students and the training of hospital residents and graduate physicians. Twenty-four students of Columbia University College of Physicians and Surgeons will serve their clinical clerkships in the wards and laboratories of St. Luke's under the instruction of members of the hospital staff directed by Dr. John F. Keating, chief of staff of the hospital's medical board. The St. Luke's medical board will continue to appoint interns and residents, the latter to be considered graduate medical students for whom the hospital and university will provide advanced instruction and experience. St. Luke's will train the doctors in its wards, operating rooms and other hospital facilities, while Columbia will offer them opportunities in its scientific laboratories for specialized instruction, research and advanced training under its established program of graduate medical education. Members of the hospital staff who are directly responsible for instruction will be appointed to academic positions in the university. A joint committee of the medical board of the hospital and the Columbia faculty of medicine will be created to coordinate the cooperative educational program and to make recommendations to both institutions on any matters affecting the program. The agreement states that "nothing in this teaching affiliation shall be construed to interfere with the separate corporate organization or the administration of the professional services of St. Luke's Hospital." This affiliation now formalizes what has been always an agreeable and productive liaison.

NORTH CAROLINA

State Medical Election.—At the recent annual meeting of the Medical Society of North Carolina at Virginia Beach, Va., Dr. Frank A. Sharp, Gainsboro, became president, Dr. James F. Robertson, Wilmington, president-elect and R. Roscoe D. McMillan, Red Springs, secretary-treasurer.

University Appointments.—The department of medicine, Duke University School of Medicine, Durham, has recently added the following members to its staff: Dr. John Hickam, research fellow of American College of Physicians, Emory University School of Medicine, Atlanta, Ga.; Dr. Frank L. Engel, associate in medicine, Emory, 1945 to 1947, and Dr. Jack D. Myers, associate in medicine, Emory, 1946 to 1947.

OHIO

Professor Woodward Retires.—Dr. Henry L. Woodward, Cincinnati, has retired as professor of obstetrics and director of the department of obstetrics at the hospital of the University of Cincinnati College of Medicine. Dr. Woodward, who has held the rank of professor and hospital department director since 1925, developed the residency system of training in obstetrics at the hospital. He served for forty-five years without financial compensation from the University of Cincinnati. The university board authorized a resolution in tribute to Dr. Woodward for his long service.

To Grant Degree in Industrial Medicine.—Plans for a new instructional unit, an Institute of Industrial Health, at the University of Cincinnati, have been announced under which study will lead to the degree of Doctor of Industrial Medicine. The university's Kettering Laboratory of Applied Physiology, Dr. Robert A. Kehoe, director, is the central unit of the institute. Cooperating with the laboratory staff will be faculty members of the university's Colleges of Medicine, Law, Business Administration and Engineering. In addition, a group of physicians in industrial organizations will assist and make available their medical facilities. Applicants for admission will be screened to meet unusually high requirements for entrance and those accepted will be limited in number. The prerequisite for admission is graduation from an approved medical school plus at least two years of training in a hospital accredited by the American Medical Association for training resident physicians. A third year of practical experience in industry is advisable. Plans are under way with a number of industries to give further aid to the institute's program by financing fellowship grants for students. The Kettering Laboratory was founded by gifts from American industry to attack the hazards to life and health presented by new chemical and manufacturing processes.

OREGON

State Medical Meeting at Portland.—The Oregon State Medical Society will hold its annual session September 4-6 at the University of Oregon Medical School, Portland, under the presidency of Dr. Stanley Lamb, Portland. Among others, guest speakers include Dr. Clifford D. Sweet, Oakland, Calif., who will speak on the child as a patient; Dr. Hans Lisser, San Francisco, medicine; Dr. Henry N. Harkins, Seattle, vagotomy in the surgical treatment of peptic ulcer; Dr. Hyman Miller, Beverly Hills, Calif., diagnosis and treatment of clinical allergy. The annual banquet will be Friday at 7 p. m. at the Hotel Multnomah, where Dr. Raymond B. Allen, president, University of Washington, will speak on "Medicine and Our Changing Times."

PENNSYLVANIA

Night Calls.—The Lackawanna County Medical Society has begun a plan to make medical service available twenty-four hours a day. Persons unable to reach their regular physician during night hours can call the Medical Answering Service telephone number, and they will be given the name of a doctor available in their area. Police and telephone company officials have been notified so that medical service can be obtained in the shortest time. The service is maintained on a twenty-four hour basis.

Appointment to Psychiatric Committee.—Dr. J. Franklin Robisson, director, Children's Service Center of Wyoming Valley, Inc., Wilkes-Barre, has been named to the Committee on Child Psychiatry of the Group for the Advancement of Psychiatry. The formation of this group was recommended by the American Psychiatric Association as an unofficial advisory group, which in the next year or two will reconcile the standards and aims of the various organizations within the psychiatric field and propose a generally accepted program to the American Psychiatric Association. The Committee on Child Psychiatry will establish training and standards on practice and clarify the relationship between the procedures in child and adult psychiatry.

GENERAL

American Chemical Society Meeting.—The national meeting of the American Chemical Society will be held in New York, September 15-19, with general headquarters at the Hotel Pennsylvania, under the presidency of Dr. W. Albert Noyes Jr., chairman of the department of chemistry, University of Rochester, Rochester, N. Y. Eleven thousand chemists are expected to attend the eighteen professional divisions of the society.

Drs. Schwartz and Armstrong Win Essay Contest.—Drs. Steven O. Schwartz and Berthe E. Armstrong of the Hektoen Institute for Medical Research of the Cook County Hospital, Chicago, won the 1947 Mississippi Valley Medical Society essay contest. Their subject was "Treatment of Iron Deficiency (Hypochromic Anemia)." They will receive a cash award and will present their essay at the twelfth annual meeting of the Mississippi Valley Medical Society at Burlington, Iowa, October 1-3.

Anniversary of Sir Ronald Ross's Discovery.—The fiftieth anniversary of the discovery by Sir Ronald Ross of living and growing malaria parasites in the stomach wall of certain mosquitoes which had been allowed to feed on patients with malaria will be observed on August 25. With this discovery the enormously interesting and important scientific work on the prevention and better treatment of malaria was placed on a solid foundation. Sir Ronald Ross was a little known medical officer serving with the British army in the hinterlands of India when he made the discovery for which the Nobel Prize later was awarded to him.

Centennial Speeches by Clergymen Available on Records.—The speeches at the religious observance which opened the American Medical Association centennial have been recorded, and phonograph records can be made available if there is sufficient interest in the medical profession in having these records. The three sermons (see p. 1478) by Monsignor Fulton J. Sheen, Rabbi Joshua Loth Liebman and Rev. Ralph C. Hutchison, in condensed form as delivered by radio, will be made available in three phonograph records of two sides each on vinylite plastic. Delivered in a cloth-bound album, the price will be $6, remittance to accompany the order. Address the Order Department, American Medical Association, 535 North Dearborn Street, Chicago 10.

Medical Record Librarians Meeting.—The annual conference of the American Association of Medical Record Librarians will be held September 7-12 at the Hotel Commodore, New York. Subjects to be discussed include the Future of Medical Records in the Army, Navy and Veterans' Hospitals; Uses of Mechanical Aids in the Medical Record Department; Procedure in Reorganization of the Medical Record Department; Methods of Organizing State and Local Associations; Medical Audit, Compilation of Statistics, Civil Service Recognition and Establishment of Job Classifications in Federal, State and County Hospitals. Friday afternoon there will be a panel discussion on Standard Nomenclature of Disease and Operations.

Extend Closing Date of Hygeia Suggestion Contest.—At the centennial session in Atlantic City in June a contest was opened with the object of obtaining suggestions for the improvement of *Hygeia*, the health magazine published by the American Medical Association. Thirty-seven prizes varying from $100 to $5 are available to winners in the contest. Those desiring to participate only need write a brief letter of one hundred words or less suggesting how to improve the editorial content, pictorial presentation, typography or other features of *Hygeia*. The closing date for the contest has been extended to September 30. Letters should be mailed to the editor, Hygeia, 535 North Dearborn Street, Chicago 10, before midnight September 30. *Hygeia* reserves the right to quote all or part of these letters. The judges will be a committee of officials of the American Medical Association. The contest is open to physicians, interns and medical students.

Edwin Grey Cope ⊕ Hornersville, Mo.; St. Louis College of Physicians and Surgeons, 1910; past president of the Dunklin County and Southeast Missouri Medical societies; served on the school board; on the staff of the Presnell Hospital in Kennett, where he died May 28, aged 65, of heart disease.

Clarence Vincent Costello ⊕ Holland, Mich.; University of Buffalo School of Medicine, 1911; fellow of the American College of Surgeons; formerly instructor in surgery at the University of Rochester School of Medicine and Dentistry; an officer during World War I; served on the staffs of the Strong Memorial, Rochester General, St. Mary's, Monroe County and Rochester State hospitals, all in Rochester, N. Y.; on the staff of the Holland Hospital; died in Los Angeles May 31, aged 60, of carcinoma of the esophagus.

William Wilhelm Craven, Charlotte, N. C.; University of Maryland School of Medicine, Baltimore, 1903; member of the American Medical Association; died May 15, aged 68, of coronary thrombosis.

James Lester Davis, Unionville Center, Ohio; Starling Medical College, Columbus, 1906; member of the American Medical Association; died in St. Francis Hospital, Columbus, May 5, aged 77, of intestinal obstruction.

William Davis ⊕ St. Paul; Harvard Medical School, Boston, 1880; an Affiliate Fellow of the American Medical Association, serving as a member of the House of Delegates in 1903 and 1904; past president of the Ramsey County Medical Society and the Minnesota State Medical Association; at one time member of the state board of medical examiners; died May 9, aged 93, of fracture of the hip and malnutrition.

Alfred Desrochers, Adams, Mass.; Albany (N. Y.) Medical College, 1895; on the courtesy staff of the St. Luke's Hospital in Pittsfield; on the staffs of the North Adams (Mass.) and the Plunkett Memorial hospitals; died May 13, aged 80, of coronary thrombosis and pernicious anemia.

James Edwin Dewey, Springfield, Mo.; Rush Medical College, Chicago, 1903; interned at the Frisco Hospital in Springfield and St. Mary's Hospital in Kansas City; member of the American Medical Association; past president of the Greene County Medical Society; served during World War I; on the staffs of St. John's and Burge hospitals and the Springfield Baptist Hospital, where he died May 23, aged 67, of coronary thrombosis.

Clyde Owen Donaldson ⊕ Kansas City, Mo.; University Medical College of Kansas City, 1900; past president of the Jackson County Medical Society; member of the American College of Radiology; served in France during World War I; died in St. Joseph Hospital May 25, aged 69, of cerebral occlusion.

Harold Sparrow Dorrance, Rochester, N. Y.; Harvard Medical School, Boston, 1920; member of the American Medical Association and the Rochester Academy of Medicine; on the staff of the Highland Hospital; died May 21, aged 55, of coronary thrombosis.

Charles M. Eckler, Williamstown, Ky.; Kentucky School of Medicine, Louisville, 1908; member of the American Medical Association; member of the Selective Service Board during World War II; for many years medical examiner for the Southern Railway; served on the board of education of Williamstown and the county board of health; director of the Bank of Williamstown; past president of the Rotary Club; died June 7, aged 67, of heart disease.

Alton Le Roy Flanders, Boston; University of the City of New York Medical Department, 1893; died April 16, aged 83, of cerebral hemorrhage.

Edgar Arthur Forsyth, Buffalo; Niagara University Medical Department, Buffalo, 1889; member of the American Medical Association and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; specialist certified by the American Board of Otolaryngology; on the staffs of the Millard Fillmore, Emergency, Our Lady of Victory and Charity Eye, Ear, Nose and Throat hospitals; died May 25, aged 79, of uremia.

Alfred Edward Foster, Wilkes-Barre, Pa.; Baltimore Medical College, 1910; member of the American Medical Association; died in the General Hospital May 29, aged 69, of cerebral hemorrhage.

Walter Thompson Garfield ⊕ Boston; Harvard Medical School, Boston, 1909; professor of dermatology and syphilology emeritus at the Tufts College Medical School; specialist certified by the American Board of Dermatology and Syphilology; member of the New England Dermatological Society; consultant, Norwood (Mass.) and Long Island hospitals; on the staffs of the Evangeline Booth Maternity Hospital, Cambridge City (Mass.) Hospital and the Boston City Hospital, where he died May 31, aged 65, of cerebral thrombosis.

William Leak Gilbert, Atlanta, Ga.; Atlanta Medical College, 1888; Jefferson Medical College of Philadelphia, 1891; member of the American Medical Association; served as health officer of Fulton County and as a member and chairman of the board of county commissioners; died May 7, aged 81.

Harry Theodore Harding, Washington, D. C.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; member of the American Medical Association; died in the Garfield Memorial Hospital May 28, aged 77, of diabetes mellitus.

John R. Heath ⊕ Grover Hill, Ohio; Starling Medical College, Columbus, 1887; served as president and secretary of the Paulding County Medical Society, president of the Tri-County Medical Society, comprising Paulding, Van Wert and Mercer counties, coroner of Pike County and health commissioner of Paulding County; died May 24, aged 88, of cerebral hemorrhage.

Olly J. Henslee, Cincinnati; Medical College of Ohio, Cincinnati, 1894; at one time affiliated with the Good Samaritan and General hospitals; died May 22, aged 80, of heart disease.

Alfred Webb Herron, Vinita, Okla.; Arkansas Industrial University Medical Department, Little Rock, 1891; member of the American Medical Association; on the staff of the Eastern Oklahoma Hospital; served as president of the Bank of Adair; died May 16, aged 76, of coronary thrombosis.

Frank Hussy Jackson ⊕ Houlton, Maine; Columbia University College of Physicians and Surgeons, New York, 1901; fellow of the American College of Surgeons; member of the New England Surgical Society; medical examiner for Aroostook County; served during World War I and World War II as an examining physician for the local draft boards; on the staff of the Aroostook Hospital; served as chairman of the editorial board of the *Maine Medical Journal;* died May 16, aged 70.

Jacob Kaszer, Plymouth, Ind.; College of Physicians and Surgeons of Chicago, 1886; served as county coroner; died May 28, aged 91, of senility.

Abraham Joseph King, Indianapolis; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; died June 17, aged 84, of cerebral hemorrhage and chronic myocarditis.

Harry Hartung Kleinberger ⊕ Millburn, N. J.; University of Cincinnati College of Medicine, 1931; police surgeon for many years; on the staffs of the Orange (N. J.) Memorial Hospital and the East Orange (N. J.) General Hospital; died in the Sinai Hospital in Baltimore June 5, aged 43, of uremia.

Otto F. Krueger, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1896; died June 4, aged 71, of carcinoma of the tongue.

George Ludwig Laporte ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1894; served as assistant professor of clinical medicine at his alma mater; on the consulting staff of the Lenox Hill Hospital; died June 16, aged 73, of arteriosclerosis and chronic myocarditis.

Everton Jay Lawrence, Windermere, Fla.; Western Reserve University Medical Department, Cleveland, 1905; died in the University Hospital, Cleveland, June 19, aged 70, of hypertension and heart disease.

Robert Rickards Leach, Oil City, Pa.; University of Rochester School of Medicine and Dentistry, 1945; died June 3, aged 30.

Albert Washington Lewis, Copperhill, Tenn.; University of Nashville Medical Department, 1901; member of the American Medical Association; died May 16, aged 72, of Parkinson's disease and acute nephritis.

William J. Loler, St. Louis; Barnes Medical College, St. Louis, 1899; died in Indio, Calif., April 28, aged 71, of cerebral hemorrhage.

Edward G. Lukemeyer, Huntingburg, Ind.; Louisville (Ky.) Medical College, 1885; past president of the Du Bois County Medical Society; director of the First National Bank; surgeon for the Southern Railway; died May 26, aged 87, of angina pectoris.

Harold Cleveland Lyman, Utica, N. Y.; New York Homeopathic Medical College and Flower Hospital in New York, 1917; affiliated with the Memorial Hospital; died May 20, aged 54, of acute myocarditis and calculous pyonephrosis.

Patrick George McCabe ⊕ Fond du Lac, Wis.; Milwaukee Medical College, 1912; served during World War I; past president of the Fond du Lac County Medical Society; on the staff of St. Agnes Hospital, where he died May 17, aged 63, of general peritonitis secondary to pneumonia.

Donald Ellison MacGregor ⊕ Indianapolis; Chicago College of Medicine and Surgery, 1917; served during World War I and later with the Army of Occupation in Germany; on the staff of the Methodist Hospital, where he died June 20, aged 55, of carcinoma of the esophagus with metastasis to the liver and lungs.

Donald Ross MacIntyre, Negaunee, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; fellow of the American College of Surgeons; member of the medical staff of the Cleveland-Cliffs Iron Company; died in the Morgan Heights Sanatorium in Marquette June 5, aged 65, of tuberculosis.

Sherman Logan McKinney, Huntingburg, Ind.; University of Louisville Medical Department, 1912; member of the American Medical Association; also a graduate in pharmacy; served overseas during World War I; affiliated with St. Mary's Hospital in Evansville; a director of the First National Bank, where he had been president; died in the Norton's Infirmary, Louisville, May 29, aged 59, of cardiac failure.

Julian Yerkes Malone ⊕ Milwaukee; Washington University School of Medicine, St. Louis, 1921; served with the Chemical Warfare Service during World War I; on the staffs of the Columbia Hospital, Children's Hospital and Mount Sinai Hospital, where he died June 10, aged 54, of hypertension.

Sheridan Waterman Mattox ⊕ Marion, Ohio; Eclectic Medical Institute, Cincinnati, 1896; past president of the Marion Academy of Medicine; served during World War I; served on the board of health; died May 24, aged 78, of cerebral hemorrhage.

Matthew Taylor Mayes, Springfield, Mass.; Dartmouth Medical School, Hanover, N. H., 1903; for many years a member of the state board of registration in medicine; died June 2, aged 76, of coronary thrombosis.

Charles Joseph Mengis, Buffalo; Niagara University Medical Department, Buffalo, 1897; died April 27, aged 72, of hypertension and cerebral hemorrhage.

Washington Merscher ⊕ Clifton Springs, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1910; formerly instructor in medicine and volunteer assistant in the cardiac clinic at the Temple University School of Medicine in Philadelphia, where he was on the staff of the Germantown Hospital and from 1932 to 1937 lecturer on medical diseases at the Germantown Hospital Nurses Training School; affiliated with the Clifton Springs Sanitarium; died June 15, aged 58, of coronary thrombosis.

Charles Albert Miller, Las Cruces, N. M.; College of Physicians and Surgeons, Baltimore, 1897; member of the American Medical Association; served as president and councilor of the Fourth District of the New Mexico Medical Society; past president, Dona Ana County Medical Society; for many years physician for the Selective Service; member of the school board; jail physician; died May 13, aged 76, of chronic myelogenous leukemia.

Thomas Moate, Gridley, Ill.; Northwestern University Medical School, Chicago, 1897; member of the American Medical Association; died May 31, aged 75, of coronary thrombosis.

George Washington Morgan, Yerkes, Ky.; University of Louisville Medical Department, 1911; died May 17, aged 66.

Herman Alfred Morrill, Gardner, Mass.; University of Vermont College of Medicine, Burlington, 1925; member of the American Medical Association; served overseas during World War I; affiliated with the Hospital Cottages for Children at Baldwinsville and the Henry Heywood Hospital, where he died May 28, aged 48, of rheumatic heart disease.

John Reid Morrison ⊕ Bellingham, Wash.; Trinity Medical College, Toronto, Ont., Canada, 1902; member of the medical advisory board of Whatcom County during World War I; fellow of the American College of Surgeons; served as president and vice president of the Washington State Medical Association; on the staffs of St. Luke's Hospital and St. Joseph's Hospital, where he died April 8, aged 73, of chronic myocarditis and diabetes mellitus.

Albert Carl Muccilli, Duluth, Minn.; Marquette University School of Medicine, Milwaukee, 1944; interned at the Naval Hospital, National Naval Medical Center in Bethesda, Md.; served in the medical corps of the U. S. Naval Reserve during World War II; accidentally drowned at Boulder Lake while fishing May 15, aged 26.

Francis Albert Muccilli, Duluth, Minn.; Marquette University School of Medicine, Milwaukee, 1944; interned at St. Mary's Hospital in Detroit; served in the medical corps, Army of the United States, during World War II; accidentally drowned at Boulder Lake, May 15, aged 29, while fishing.

John Leslie Murphy, El Paso, Texas; University of Michigan Medical School, Ann Arbor, 1928; diplomate of the National Board of Medical Examiners; fellow of the American College of Surgeons; on the staffs of the City-County Hospital, Hotel Dieu, Sisters' Hospital and the Southwestern General Hospital; died May 2, aged 44.

James Anthony O'Connor ⊕ North Tonawanda, N. Y.; University of Buffalo School of Medicine, 1919; served during World War I; for many years associated with the De Graff Memorial Hospital; died April 9, aged 49, of nephritis and hypertension.

Elmer Benjamin Packer, Toulon, Ill.; Jefferson Medical College of Philadelphia, 1899; served during World War I; member of the city council and board of education; affiliated with the Kewanee (Ill.) Public Hospital; died May 27, aged 82, of diabetes mellitus.

Howard Simmons Paine, Miami, Fla.; Albany (N. Y.) Medical College, 1881; fellow of the American College of Surgeons; for many years on the staff of the Glens Falls (N. Y.) Hospital; died May 5, aged 90, of pneumonia.

Dominick Andrew Palmisano ⊕ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1913; on the staffs of the Eye, Ear, Nose and Throat Hospital, Hotel Dieu, Women's Dispensary and Charity Hospital; died April 21, aged 59.

Walter Edward Patrie, Blackfoot, Idaho; Ensworth Medical College, St. Joseph, 1899; member of the American Medical Association; served overseas during World War I; for many years county health officer; died May 18, aged 69, of coronary occlusion and hypertension.

Richard Sebastian Pearse, Brooklyn; New York Homeopathic Medical College and Hospital, New York, 1902; served in France during World War I; died in the Kings County Hospital April 19, aged 71, of cerebral thrombosis and hypertensive cardiovascular disease.

George Winchester Penn, Humboldt, Tenn.; Vanderbilt University School of Medicine, Nashville, 1884; died May 20, aged 82, of coronary thrombosis.

George Emery Percy, Salem, Mass.; Boston University School of Medicine, 1879; died May 28, aged 88, of arteriosclerosis and heart disease.

Sophus George Peterson ⊕ Rutland, Ill.; Rush Medical College, Chicago, 1897; served on the school board; served on the staff of St. Mary's Hospital in Streator; died May 5, aged 72, of coronary thrombosis.

Willis Staats Pomeroy, Gallupville, N. Y.; Kentucky School of Medicine, Louisville, 1904; died April 20, aged 75, of osteoarthritis, gangrene of both legs and arteriosclerosis.

Louis John Porstmann, Davenport, Iowa; Barnes Medical College, St. Louis, 1898; member of the American Medical Association; served on the staff of the Mercy Hospital; died in the Henry Ford Hospital, Detroit, May 21, aged 82, of cerebral thrombosis.

Ulysses Grant Powers, Evanston, Ill.; Medical College of Indiana, Indianapolis, 1894; died May 17, aged 82, of angina pectoris.

Peter James Reynolds, Dwight, Ill.; Rush Medical College, Chicago, 1894; affiliated with St. Mary's Hospital in Streator; died in Chicago June 6, aged 77, of coronary thrombosis.

Valentin Rothermel, Chicago; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1923; died May 22, aged 53, of carcinoma of the rectum with metastases.

William Sidney Rowles, Hudson, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1940; interned at the Bellevue Hospital in New York; served a residency at the Greenwich (Conn.) Hospital; affiliated with the Veterans Hospital in Newington, Conn.; served during World War II; died in Stockport May 31, aged 32, of a fractured skull received in an automobile accident.

Charles Edwin Schlappich, Birdsboro, Pa.; Baltimore Medical College, 1908; member of the American Medical Association; served as chief deputy coroner, president of the board of health and director of the First National Bank; on the staff of St. Joseph Hospital in Reading, where he died May 14, aged 65, of injuries received in an automobile accident.

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C. M. C. Medical College
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Charles Edward Scofield ⊕ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1899; fellow of the American College of Surgeons; served as president of the Kings County Medical Society; senior surgeon to the Brooklyn Eye and Ear Hospital; otolaryngologist, House of St. Giles the Cripple; died May 18, aged 70.

Alexis Clynton Scott ⊕ Cleveland; University of Wooster Medical Department, Cleveland, 1898; died in the Lakeside Hospital April 21, aged 72, of hypertensive cardiovascular disease.

Henry Clifford Sherer, South Norwalk, Conn.; University of the City of New York Medical Department, New York, 1892; member of the American Medical Association; served as health officer; member of the board of education and board of health; on the staff of the Norwalk Hospital, where he died May 26, aged 78, of myocarditis.

William Erasti Sherman ⊕ Winter Haven, Fla.; Birmingham Medical College, 1915; served during World War I; died May 31, aged 58, of pulmonary tuberculosis.

Louis A. Shultz ⊕ Rockford, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1892; died May 17, aged 79, of coronary occlusion.

Jacob D. Smith, Shelbina, Mo.; Rush Medical College, Chicago, 1870; member of the American Medical Association; died May 8, aged 98.

Lloyd Ernest Smith ⊕ San Bernardino, Calif.; College of Medical Evangelists, Los Angeles, 1925; affiliated with the Loma Linda (Calif.) Community and St. Bernardino hospitals; died in Glendale May 1, aged 57, of heart disease.

Henry Curtis Butler Snow, Buzzards Bay, Mass.; Tufts College Medical School, Boston, 1897; examining physician for the local draft board during World War II; served as school physician and a library trustee; died May 27, aged 70, of uremia.

Ludwig R. Sommer, Chicago; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1920; member of the American Medical Association; affiliated with St. George's Hospital; died May 17, aged 55, of carcinoma of the stomach.

Aaron Burleigh Spahr, War, W. Va.; Medical College of Virginia, Richmond, 1926; member of the American Medical Association; first lieutenant, medical reserve corps, not on active duty; died in the Norburn Hospital, Asheville, N. C., April 20, aged 49, of portal cirrhosis.

William E. Sparks, Sandy Hook, Ky.; Kentucky School of Medicine, Louisville, 1907; veteran of the Spanish-American War; died in Bruen May 31, aged 73.

Rufus Franklin Spears, Meridian, Miss.; Louisville National Medical College, Medical Department State University, 1911; died May 13, aged 60, of chronic myocarditis and acute bronchitis.

Joseph Y. Spinuzza, Buffalo; University of Buffalo School of Medicine, 1925; member of the American Medical Association; captain in the medical corps, Army of the United States, during World War II; affiliated with the Columbus Hospital; died April 21, aged 48, of subacute bacterial endocarditis.

Robert Franklin Steele, Chicago; Chicago College of Medicine and Surgery, 1913; died in St. George Hospital May 25, aged 60, of coronary thrombosis.

Emerald Jasper Steen ⊕ Fullerton, Calif.; College of Medical Evangelists, Los Angeles, 1920; past president of the Orange County Medical Society; chairman of the staff of the Fullerton Hospital; died near Gorman April 24, aged 52, of injuries received in an automobile accident.

Olaf Martin Steffenson ⊕ Chicago; Marion-Sims College of Medicine, St. Louis, 1899; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; formerly on the staff of the Chicago Eye, Ear, Nose and Throat Hospital; died June 3, aged 68.

John Bethune Stein, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; professor emeritus of physiology at the New York University College of Dentistry; died May 16, aged 77.

Albert Russell Stephens, Delta, Ala.; Southern Medical College, Atlanta, 1888; member of the American Medical Association; died May 9, aged 89.

John Lewis Tamisiea ⊕ Missouri Valley, Iowa; State University of Iowa College of Medicine, Iowa City, 1896; formerly member of the state board of health; served as a member of the city council and as president of the People's State Bank of Missouri Valley; died May 10, aged 81, of coronary thrombosis.

Walter McCreary Taylor, Ovid, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1913; served during World War I; died in the Mercywood Hospital, Ann Arbor, May 8, aged 61, of nephritis and heart disease.

Loyd Thompson, San Diego, Calif.; University of Arkansas School of Medicine, Little Rock, 1910; at one time city bacteriologist at Little Rock, where he had been pathologist at St. Vincent's Hospital; formerly on the staff of St. Joseph's Infirmary in Hot Springs National Park, Ark.; served during World War I and later as a colonel in the medical reserve corps of the U. S. Army; author of several books; at one time editor of the *American Journal of Syphilis*; died May 21, aged 64.

Lawson Lorenzo Truax ⊕ Klamath Falls, Ore.; St. Louis College of Physicians and Surgeons, 1906; fellow of the American College of Surgeons; past president of the Klamath County Medical Society; on the staff of the Klamath Valley Hospital; died in Gold Beach April 27, aged 65.

Lister H. Tuholske ⊕ St. Louis; Washington University School of Medicine, St. Louis, 1909; past president of the Washington University Medical Alumni Association; served on the staffs of the Jewish, Deaconess, De Paul and Missouri Baptist hospitals; died May 2, aged 60.

George Theron Van Voorhees, Lomita, Calif.; Eclectic Medical Institute, Cincinnati, 1893; served on the staff of the San Pedro Hospital, where he died April 16, aged 76, of pneumonia.

Claude Milton Vaughan ⊕ Paris, Ky.; Kentucky School of Medicine, Louisville, 1908; served during World War I; on the staff of the Massie Memorial Hospital; president of the Bourbon County Medical Society; died April 10, aged 63, of metastatic melanosarcoma.

Feodor Von Raitz, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1890; died March 13, aged 87.

Clark Woodworth Wakefield ⊕ Pittsburgh; Jefferson Medical College of Philadelphia, 1917; served during World War I; died in the Western Pennsylvania Hospital April 23, aged 52, of myocardial infarction.

Coburn Elder Walden, Flint, Mich.; Howard University College of Medicine, Washington, D. C., 1926; died in the Hurley Hospital May 21, aged 46, of pulmonary tuberculosis.

Ellis David Walker, Lynchburg, Va.; Detroit Homeopathic College, 1906; died May 6, aged 84, of senility.

James Francis Walsh ⊕ Bridgeport, Conn.; Columbia University College of Physicians and Surgeons, New York, 1919; fellow of the American College of Surgeons; on the staff of St. Vincent's Hospital; died in Chicago June 11, aged 51, of coronary occlusion.

De Forrest Emanuel Walters, Elizabethtown, Pa.; Jefferson Medical College of Philadelphia, 1901; died in the Masonic Homes Hospital April 28, aged 70, of carcinoma of the colon and bronchopneumonia.

Frank Ryan Warden, Adamsville, R. I.; College of Physicians and Surgeons, Baltimore, 1889; died May 28, aged 85, of coronary thrombosis.

Joseph Samuel Webster ⊕ Gallipolis, Ohio; Miami Medical College, Cincinnati, 1899; died May 25, aged 73, of coronary occlusion.

Joseph Elliott Wellman, Port Huron, Mich.; Detroit College of Medicine, 1905; past president of St. Clair County Medical Society; member of the American Medical Association; member of the board of the Port Huron General Hospital, where he died May 8, aged 69, of a hip fracture and other injuries received in a fall.

John McElroy White, Jackson, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1876; died May 21, aged 89, of senility.

David Lloyd Williams, Denver; Wisconsin College of Physicians and Surgeons, Milwaukee, 1911; served during World War I; died May 1, aged 66.

Robert Price Woods ⊕ Altheimer, Ark; Medical Department of Tulane University of Louisiana, New Orleans, 1904; veteran of the Spanish-American War; died in Pine Bluff, May 9, aged 69, of injuries received in an automobile accident.

Walter C. Woodward ⊕ Seattle; Harvard Medical School, Boston, 1904; at one time city physician; fellow of the American College of Surgeons; past president of the Seattle Surgical Society and the King County Medical Society; on the staff of the Swedish Hospital, where he died May 3, aged 70, of arterial hypertension.

Foreign Letters

MADRID

(From Our Regular Correspondent)

July 5, 1947.

A Course on Infectious Diseases

Dr. L. Zamorano, head of the pathology department at the National Hospital for Infectious Diseases, has just given a course on infectious diseases in the Institute of Medical Pathology directed by Dr. Gregorio Marañon before large audiences of physicians and students. His lectures, which are to be published, were magnificent, especially those dealing with atypical pneumonia, sepsis, typhoid and salmonellosis. In the talk on exanthematic typhus, he spoke from experience in the latest epidemic in Madrid, where he studied 42 postmortems from the points of view of anatomy and histology and found, in addition to the typical lesions already described by others, further nonspecific lesions which were related to the symptomatology (myocarditis, encephalitis, hepatitis). In another paper, on visceral leishmaniasis, he described certain granulomatous formations in the lung very similar to miliary tuberculosis but without any caseation and with Donovan bodies inside the macrophages, which he was the first to call attention to. Dr. Zamorano's fellow workers in this course of lectures on infectious diseases were Drs. A. Duque Sampayo (circulatory system and infectious diseases), F. Vega Diaz (endocarditis lenta), E. Lopez Vidriero (diphtheria), J. Martinez Diaz (poliomyelitis), J. Gimena (brucellosis), L. Arteta and Professor Marañon, who gave the closing lecture, "the febricular syndrome," in which he gave a review with especial reference to his recent findings in connection with hypothalamic and endocrine syndromes in general.

Institute of Medical Research

Dr. C. Jimenez Diaz, professor of internal medicine in the Faculty of Medicine of Madrid University, took steps in 1934 to set up an institution for clinical investigation, with the financial support of private capital, and he succeeded in organizing an Institute of Medical Research which opened in the Madrid University City in July 1936. The outbreak of the civil war immediately afterward interrupted the work planned, because the University City was right on the battlefield throughout the three years of war. Already the institution had been included in the University of Madrid and two floors had been allotted to it.

Some of the institute's earliest collaborators are now in exile working in other research centers: Dr. Severo Ochoa is now professor of pharmacology in University College, New York; Dr. Felipe Moran now works in the Médical Clinic of the Railway Hospital at Buenos Ayres; Dr. F. Bielschowsky is engaged in a scientific center at Sheffield, England.

After the civil war Professor Jimenez Diaz gathered his collaborators together again in a new building where, so far, useful work has been done. A number of new men have joined Professor Jimenez Diaz. At present they are functioning in the institute sections of physiology under Dr. Francisco Grande Cobian, biochemistry under Dr. H. Castro Mendozoa, bacteriology and immunology under Dr. Emilio Arjona and experimental pathology under Dr. P. De La.Barreda. Affiliated with this institute are the hospital services directed by Professor Jimenez Diaz, of which the heads are Drs. J. Rof Carballo, E. Lopez Garcia and J. Parra Lazaro, with subsections attached to them.

The institute was entrusted by decree of the director general of public health in 1941 to study problems connected with feeding the Spanish people and, by ministerial order issued since the war, it has become a part of the Cajal Trust of the Higher Council for Scientific Research. Studies have been made on lathyrism, metabolism of the lipoids, the lipotropic action of choline, allergy and other subjects. With Dr. F. De Castro's collaboration they have proved that the experimental muscular dystrophy produced by avitaminosis E corresponds to an alteration of the myoneural synapsis (increase of cholinesterase in the muscles of dystrophic rabbits). P. de la Barreda is now focusing attention on experimental hypertension, and recently they have found that the artery wall plays a part in hypertension, producing an enzymatic substance which, when acting on the blood plasma, gives rise to a hypertensive principle. This fact has been designated by C. Jimenez Diaz in a recent paper as "internal secretion of the arteries."

Dr. F. Grande Cobian and Dr. Oya have done work on the metabolism of carbohydrates and the importance of certain intermediary products (pyruvic acid and citric acid) in their utilization. These papers have appeared in the *Anales del Instituto de Investigaciones Médicas* and are republished, as they come out, in the *Revista Clinica Española.*

Anti-Insulinic Substances of Pancreatic Origin

In the Institute of Experimental Medicine of the Higher Council for Scientific Research Dr. J. L. Rodriguez-Candela, along lines which he started with Dr. L. Bauman at Columbia University, is working on the possible existence of anti-insulinic substances of pancreatic origin. He proved, seven months before Thorogood, that dogs with alloxanic diabetes require much more insulin to compensate their diabetes than after the removal of the pancreas. He has proved in a second experiment that this is not due to any disturbance in the absorption of nutritive elements, since, if we tie the pancreatic ducts in a dog with alloxanic diabetes, the animal does not vary in weight and does not need more insulin if pancreatic ferments are administered (the author gives raw pancreas); if, after some time, when the islet pancreatic tissue has become atrophied, the whole of the remaining pancreas is removed, he observes that the need of insulin diminishes. In a later paper he shows that this anti-insulinic activity is stimulated by acetylcholine. He has ascertained that the ocular complications of alloxanic diabetes are not due to lack of insulinic compensation; they are due to a modification of the plasma proteins (beta-globulins), with a lessening of the complementary power of the serum, which may explain why diabetic patients have so little resistance to infection. This lessening of the complementary power of the serum improves after the administration of amino acids, and even more, after that of a pancreatic extract devoid of hypoglycemic activity. Dr. J. L. Rodriguez-Candela's papers have appeared in volume 29 of the *Anales de la Academia Medico-Quirurgica Española* (1945-1946), and the latest ones have come out in the *Revista del Institute Nacional de Ciencias Medicas* (Madrid).

Studies on Tuberculosis

Professor M. Tapia, for many years director of the National Hospital for Infectious Diseases (formerly Hospital del Rey), left Spain during the civil war and went to Portugal, where he has been carrying out studies on tuberculosis at the Caramulo Sanatorium. A product of his studies in Portugal is the book Formas Anatomoclinicas, Diagnostico y Tratamiento de la Tuberculosis Pulmonar (Porto, Artes Graficas, 1939, and two later editions). It is probably the most complete tome in the world on tuberculosis and it is a subject of pride for us that it is written in Spanish.

After several years' residence in Portugal, he has been allowed to come to Spain several times; on his latest two visits he lectured on tuberculosis. The first lecture was entitled "Extrapleural Pneumothorax" and the second "Tracheobronchial Tuberculosis." These have been mentioned in a previous letter.

His latest book, La tuberculosis traquobronquial (Lisbon, Livraria Luso-Española, 1946), is the first contribution in Spanish to our knowledge on the subject. He sets forth the part played by bronchial tuberculosis in the various stages of tuberculosis of the respiratory tree, its symptomatology and its treatment. He devotes a chapter to bronchial tuberculosis in relation to collapsotherapy and indicates with great precision the conditions in which bronchial tuberculosis is a decisive factor and what treatment should be followed. The book is enriched with many clinical records from Caramulo, and tomographic pictures, a method of radiologic examination by means of which he often establishes a precise diagnosis and is able to localize the bronchial lesions without resorting to bronchoscopy.

To our sorrow, this book was written in exile, and those of us who see Dr. Tapia coming and going deeply regret that he has not accepted the invitation extended by the Spanish authorities to take up his post again as director of the National Hospital for Infectious Diseases.

TURKEY

(From Our Regular Correspondent)

ANKARA, July 10, 1947.

The New University Law

With the enactment of the university law in June 1946 universities in Turkey became independent, self-governing institutions. When the Istanbul University, which had functioned since 1909, was reorganized in 1933 it retained its scientific freedom but lost its independence and self government and came under the jurisdiction of the Ministry of Education, which from then on decided on matters of administration, the appointment of the faculty, changes therein, the curriculum and other matters of instruction. As a result of the dynamic leadership and the untiring efforts of its president (1943-1946), Dr. Tevfik Saglam, who drafted the bill and introduced it through the Ministry of Education, it recovered its independence and made the other universities self-governing bodies.

The law has eighty-one articles. It determines the president, the senate, the faculty, the committees, the relationship of departments to other universities, the status of the faculty members engaging in private practice, indemnities, duties of assistants, instructors and interpreters, matters of discipline, employees, governmental control and matters of finance.

There are three universities in Turkey, the Istanbul University, the Istanbul Technic University and the Ankara University. At its inception in 1909 the Istanbul University consisted of the Medical School, the School of Law, the School of Literature, the School of Mathematics and the School of Theology, the latter becoming extinct with the advent of the republic. Founded in 1827, the Medical School is the oldest. The School of Political Science was established in 1866 and is a separate institution. The Istanbul School of Engineering, which was established in 1872, has been a separate university for the past five years. The Ankara University comprises the Medical School, the School of Law, the School of Literature and the School of Science. The School of Political Science at Ankara and the Ankara Conservatory are independent institutions; so are the Schools of Commerce and Economics at Istanbul and Smyrna. A bill has been introduced which will give university status to the Ankara Institute of Agriculture, which includes the School of Agriculture, the Veterinary School and the School of Forestry.

During 1946-1947 the Istanbul University had an enrolment of 11,158, of which 3,077 were medical, 2,394 law, 2,171 science, 2,130 literature, 1,068 economics, 161 pharmacy and 157 dentistry students. Of the medical students 261 are taking the one year preparatory course in physics, chemistry and biology at the School of Science; the remaining 2,916 are taking the five year course at the Medical School; of these 1,472 are civilians and 312 are women; 714 students are living at the student homes provided by the Ministry of Health. At the homes they receive free board and maintenance, are provided with every article of clothing and all textbooks and receive a monthly allowance and free tuition, in return of which they are to serve the government after graduation; 318 students are living at the dormitories provided by the army medical corps.

According to the new law an indemnity is granted professors who abstain from engaging in private practice. A full time professor receives 400 pounds in addition to his monthly salary, a full time associate professor 300 pounds and a full time assistant professor 200 pounds. At official occasions university professors follow the supreme court, the council of state and the court of finance and precede all ministries. University professors are not subject to the age limit; if their physical and mental condition permits, they may teach until 70 or 75 years of age. The Istanbul University 1947 budget is 11,622,501 Turkish pounds, on the staff are 99 Turkish and 36 foreign professors, 98 assistant professors, 269 assistants, 34 lecturers, 6 interpreters at the disposal of the foreign professors, 5 monitors, 11 foreign lecturers, 21 foreign technicians and 3 instructors, a total of 582 staff members; of these the Medical School has 41 Turkish and 6 foreign professors, 33 assistant professors and 120 assistants. The three classes of the Ankara University Medical School established in 1945 consists of 235 civilians, 39 women, 101 students at the dormitory of the Ministry of Health and 165 army medical students.

Sources of income of university, faculty and university unions and organizations are (*a*) government appropriations, (*b*) provincial and municipal appropriations and appropriations from societies, (*c*) fees derived from organizations affiliated with the university or a faculty, (*d*) fees derived from societies or persons engaged in research or consultation at the university, faculty or affiliated institutions, (*e*) income derived from publications, (*f*) the income from property in real estate owned by the university, faculty or affiliated institutions, (*g*) income from institutes, laboratories, clinics and outpatient departments, (*h*) income from profits made in investments, (*i*) donations and bequests.

Every year the ministries concerned in cooperation with the ministry of education and in consultation with the universities decide on the number of students to be admitted either as dormitory students or as students receiving a scholarship and on qualifications of these students other than general, which have to be published one month in advance of registration. All expenses such as registration fees, tuition fees and fees for board and maintenance, laboratory and examination fees and fees for diplomas of university dormitory or scholarship students are to be borne by the respective universities or administration.

Under the presidency of the minister of education the president and dean of each university elect from among their group for a duration of two years a member to the senate of each university. The report on the senate is to be made by one of the general secretaries of the university where the senate is in session and who has been charged with this duty by the minister of education, who, if need arises, indicates the locality where the senate is to meet.

The minister of education is in supreme authority over all the universities. Presiding over the interuniversity council, he exercises governmental control over the universities, the faculties and the committees; he investigates and approves matters relating to universities and faculties and if necessary recommends reexamination of decisions.

In agreement with the general assembly of faculty professors, the president has authority to entrust professors, associate professors and assistant professors to pursue scientific investigations or temporarily engage in research work at another university within the country or abroad either personally or as a director of scientific or professional matters.

BUENOS AIRES

(From Our Regular Correspondent)

July 17, 1947.

Resignations and Retirements in the Faculties of Medicine

The following titular professors resigned their chairs in the Faculty of Medical Sciences of Buenos Aires: Drs. Alberto Zwanck (hygiene), Neiro Rojas (legal medicine), Mariano R. Castex (clinical medicine), Alberto Peralta Ramos (obstetrics) and Juan P. Garrahan (pediatrics) and retired. Drs. Nicholás Romano (clinical medicine) and Pedro Baliña (dermatology and venereal diseases), among others, were asked to resign.

In the Faculty of Medicine of Rosario the following titular professors, among others, were removed from their chairs: Drs. David Staffieri (clinical medicine), Juan M. González (pathology), Juan T. Lewis (physiology), Enrique Roncoroni (anatomy) and J. M. M. Fernández (clinical dermatology).

The Federation of Organizations for the Defense and Progress of the Autonomic Democratic University prepared an alphabetical list of professors and auxiliary docent teachers of the six national universities who retired or were either declared "in cessation" or resigned during the period which began on the date of intervention in schools by the law of May 3, 1946. The list includes more than 1,150 professors and auxiliary personnel belonging to the following faculties: the Faculty of Medical Sciences of the University of Buenos Aires, 10 who were declared in cessation, 9 who retired and 28 who resigned; from the University of Cordoba, 8 in cessation, 4 who retired and 137 who resigned; from the University of La Plata, 9 who retired, 6 who resigned and 2 who were removed from their chairs; from the University of Litoral (Rosario), 14 who were declared in cessation and 322 who resigned. The list includes, with respect to the University of Buenos Aires, only professors and not auxiliary docent personnel.

Among the 26 titular professors of medicine and odontology recently appointed in Buenos Aires are Drs. Juan M. Muñoz (physiology), Manuel L. Pérez (clinical obstetrics, normal parturition), José W. Tobias (clinical medicine, fourth chair), Saúl I. Bettinotti (puericulture, early infancy), Juan R. Beltrán (legal medicine) (consequently he renounced his chair of history of medicine), Enrique D. U. Pierángeli (clinic of nutrition), Ricardo E. Dónovan (surgical pathology), Fernando M. Bustos (surgical clinic, third chair), Adolfo F. Landivar (surgical clinic, first chair), Antonio R. Vergara (clinical otolaryngology) and Germinal Rodríguez (hygiene and social medicine).

Institute of Medical Investigation

The Institute of Medical Investigation for Promoting Scientific Medicine, which is a private institution supported by well-to-do persons of Córdoba, was recently inaugurated in Córdoba City. It is devoted to investigation on the basic branches of medicine for purely scientific purposes. Its creation is due to the separation of Dr. Oscar Orías from his chair of physiology of the Faculty of Medical Sciences of Córdoba as well as of his collaborators because of the separation of Professor Houssay, of whom Dr. Orías was a pupil.

Drs. Oscar Orías and Enrique Moisset de Espanés are director and subdirector respectively of the institute, which has sections on pharmacology, chemistry, histology and optical recording of cardiovascular activity. Studies are now available on cardiovascular physiology under the direction of Dr. O. Orías, on pharmacology, especially on active principles of autochthonous South American plants, for instance fagarine (see The Journal March 12, 1946 and Jan. 18, 1947) under the direction of Dr. E. Moisset de Espanés, on the sexual and reproductive aspects of endocrinology under direction of Dr. Inés L. C. de Allende, and on the physiopathologic mechanism of allergy under the direction of Dr. L. Giscafré.

This institute is the second of its type. The first one was created in Buenos Aires in 1944 under the direction of Professor B. A. Houssay. The latter was created for the same reasons as the former. There were speeches at the inaugural ceremonies. Dr. B. A. Houssay spoke on "Scientific Investigations in Argentina." He said that fundamental scientific investigations are developed in universities or else in private or industrial institutions. The best progress is obtained in the last two, which offer the possibilities of working free from bureaucratic obstacles. The opening of the new institution is an important event in Córdoba, a city of unusual intellectual culture and the cradle of the first university of Argentina.

Examination of Pregnant Women for Tuberculosis

Through a law of the Buenos Aires municipality pulmonary x-ray examination of pregnant women for tuberculosis is to be obligatory and free of any cost to the patients. The examination will be performed on pregnant women who report for the first consultation to the consulting offices of municipal maternity hospitals. The proposed measures are of great value in the crusade against tuberculosis, as they offer proper treatment to tuberculous pregnant women and their babies. From now on tuberculous patients will occupy special sections of municipal maternities.

BRAZIL

(From Our Regular Correspondent)

São Paulo, July 16, 1947.

Antineoplastic Action of a Fungus

Before the Sociedade Medica São Lucas, Dr. Juvenal R. Meyer of the Instituto Biologico de São Paulo referred to the antineoplastic action of the adult form of Polyporus cinnabarinus, called by Brazilian people "orelha de pau" (ear of wood). This property is similar to the antineoplastic action found by the same author in cultures of Penicillium notatum according to a paper read some time ago before the same society, in which he pointed out the characteristics of the active substance against a transplantable tumor of the mouse.

The reproduction of this type of tumor is prevented by an aqueous extract of Polyporus cinnabarinus, while pieces of the same tumor treated under the same temperature (4 C.) during an equal period of time (seventy-two hours) maintained all their neoplastic activity.

The aqueous extract is prepared by boiling 1 part of the adult forms of the fungus with 5 or 6 parts of water for five to ten minutes. Its activity is maintained from four to six days at a temperature of 4 C. and after treatment by heat at 98 C. for thirty minutes. This antineoplastic activity is partially or completely lost when the aqueous extract is treated by animal proteins or by alkaline solutions. This may be the reason for the antineoplastic decreasing action when the extract is injected into mice bearing the tumor; it enters into contact with animal proteins before reaching the tumor.

An Indian doctor has published a paper on similar action shown by a fungus, perhaps the same Polyporus cinnabarinus that exists in Brazil.

Dr. Morris Fishbein in São Paulo

During his short visit in São Paulo Dr. Morris Fishbein of Chicago visited the Hospital da Santa Casa de Santos on July 6, the Asilo Santa Terezinha de Carapicuiba and the Escola Paulista de Medicina on July 7. Dr. Fishbein also visited the Hospital das Clinicas, the Faculdade de Saude Publica and the Instituto Pinheiros and in the evening addressed the Associação Paulista de Medicina on the theme "One Hundred Years of Medical Progress."

AUSTRALIA

(From Our Regular Correspondent)

May 26, 1947.

Medical Service in Australia

The introduction of a scheme for nationalization of medicine in Australia, while costing £45 million yearly, would break no new ground in the field of health. At best it might extend the scope of treatment offered people unable to pay or living in isolated areas. The government could, however, render valuable service at comparatively low cost by branching out in the direction of positive or protective health. At present, such expenditure is insignificant. Most of the organizations set up in this field have insufficient funds to be fully effective. These are the views of the economic adviser to the Queensland government, published in the *Economic News*, a monthly bulletin issued by the Queensland Bureau of Industry.

Private activities (with governmental subsidies) have been able to provide adequate medical treatment and health insurance facilities, but they have neither the power nor the scope to provide positive or protective measures. These must be developed by impersonal public authorities. Therefore this should be the first avenue for increased public activities. This would reduce the need for hospitals and medical care until the time arrives when economic conditions will permit the large expenditure that will be necessary for the socialization of all medical activities. Extensions in this field should include the elimination of substandard housing, large scale schemes for the eradication of mosquitoes and other pests and the elimination of earth closets. Some local authorities have already done splendid work in this field, but it is not nearly far reaching enough. Also diagnostic facilities to assist in checking the development of disease might be established. Experience in the late war showed the value of universal low cost x-ray examinations and periodic medical checks. Such a scheme applied to the whole community would result in the early notification of dangerous symptoms and the checking of disease. This might be done in schools, universities, factories and shops. A national scheme, when it is introduced, must be comprehensive. Charges made against the British scheme are its failure to provide appliances and artificial units, nursing and specialist services, and to cover maternity; also its excessive limitations on the prescription of drugs. The detailed organization of any national medical scheme adopted is a matter for consultation and determination by those who have had professional experience. However, to the layman the most advantageous system seems to be one wherein the patient's contact with the doctor is through a group clinic working in conjunction with laboratory specialists, general hospitals staffed by specialists, and less expensively equipped hospitals for subacute, convalescent and chronic cases. This system offers the patient a free choice of, say, fifteen to twenty doctors and enables consultations to be held with specialized doctors without additional visits. It offers doctors adequate laboratory and research facilities and avoids excessive expenditure on equipment, since the apparatus installed in hospitals now restricted to serious cases would be more fully utilized.

Institute of Dental Research in Sydney

Out of the appointment of a director of the laboratories of pathology, bacteriology and biochemistry to the United Dental Hospital, Sydney, in August 1946, has grown the Institute of Dental Research. The Hospitals Commission of New South Wales has provided £5,000 to establish and equip the institute, the objects of which are to promote research in dental science and a focus for the scientific activities of dentistry. The library covers all branches of medical and dental science. One of the functions of the library is a discussion group. A routine pathologic service for the dental hospital is provided. This service is available also to the general dental practitioner, who will be able to have complete laboratory examinations made for his patients.

A paper on the relation between exposed pulps and infection by the poliomyelitis virus has been published by the institute. Several others on the relation between oral bacteria and dental caries and its relation to Australian dietaries is proceeding; and an inquiry is being made into a technic for serologic identification of oral strains of yeast.

The institute is not under any financial burden for the current year, but any expansion of its activities will depend on the availability of a considerably increased income.

Graduate in Social Studies Appointed to Hospital

The first appointment of a graduate in social studies to a Queensland public hospital has been made. The appointee will be responsible for following up the medical history of children after their discharge from the hospital and will assist in attempting to find the causes of diseases produced under various economic and domestic conditions. She will assist in finding accommodation for parents of sick children who come from country districts and will investigate school records of certain types of children. It is proposed to introduce into the Queensland University next year a course in social studies which will cover economics, philosophy, history, industrial relations, physiology, nutrition and lectures on existing facilities for social service work.

New Record Low for Infant Mortality

New Zealand has established a new world's record for the mortality of infants during the first year of life. For 1946 the rate was 25.35 per thousand live births. Queensland also has a new low record for the state. For 1945 the rate was 29.67 per thousand live births. For 1944 the rate was 31.32 and in 1943 it was 37.79. For Australia the 1945 rate was 29.4. For comparison, the Australian infant mortality rates have been 115.3 for 1891, 103.6 for 1901, 68.5 for 1911, 65.7 for 1921, 42.1 for 1931 and 39.7 for 1941.

Personal Items

Dr. A. J. Canny, former senior pathologist and acting director of the Kanematsu Institute of Pathology, Sydney Hospital, has been appointed to the chair of pathology, University of Queensland.

Dr. W. Simmonds, lecturer in pathology at the University of Queensland, has been awarded a Nuffield demonstratorship in physiology at the Oxford Medical School. The appointment is for three years, for which period Dr. Simmonds has been granted leave of absence.

Mr. G. P. S. Boissard, B.Sc., lecturer in physiology, has resigned following the award to him of the Bayliss-Starling studentship (1946-1947) by the University College, London.

Dr. W. A. Wunderly has been appointed director of the new tuberculosis division of the commonwealth department of health. He has studied extensively in Europe and North America.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Naturopath as "Duly Licensed and Practicing Physician" Within Meaning of Sickness Insurance Policy.—The plaintiff sued for actual and punitive damages alleged to be due because of the defendant's failure to make weekly indemnity payments under a sick benefit policy. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of South Carolina.

The policy written by the defendant insurance company agreed to pay the plaintiff weekly sickness benefits on the conditions stated in clause 6 of the policy, namely "Weekly benefits for sickness will be paid for each period of seven consecutive days while the insured is totally disabled by sickness from performing or giving any attention whatever to his or her usual or other occupation; and necessarily confined to bed and there visited professionally by a duly licensed and practicing physician. A certificate must be furnished by the insured and signed by the physician at the beginning of each week of such disability, setting forth the nature of illness and probable duration."

The matter came before the court on exceptions which raised the single question of whether or not the plaintiff complied with the aforementioned provision of the policy requiring attendance "by a duly licensed and practicing physician" and the issuance of a certificate by such physician at the beginning of each week of the alleged disability. The evidence showed that plaintiff was attended by a practitioner of that school of medicine which is known as naturopathy and that the required physician's certificate on which the plaintiff based his claim was signed by such practitioner. It is the defendant's contention that such a practitioner is not a "duly licensed and practicing physician" within the meaning or contemplation of the provision quoted.

At the time the plaintiff's claim arose, said the Supreme Court, the practitioner in question was certainly a "naturopathic physician" within the specific language of the South Carolina statutes enacted in 1937 which permit the practice of naturopathy in the state. He was practicing his profession within the indicated field and in the absence of anything in the record to show the contrary, he must be deemed to have been duly licensed. He was, then, a duly licensed and practicing naturopathic physician and was therefore an eligible or qualified practitioner to sign the certificate required by defendant's policy, unless the fact that he was a naturopathic physician, instead of merely a "physician," disqualified him. Naturopathy, continued the court, is one of a number of fields in the art of healing which have been recognized by the general assembly as accepted processes of preventive and curative medicine. Any one engaged in the practice of any of such branches of medicine, after having been duly licensed, stands for all purposes in the position of a physician in the orthodox field of medicine, at least to the extent that he limits his activities to the recognized scope of his particular profession. An osteopath, a homeopath, a chiropractor, a magnetic healer and a naturopath are alike practitioners in the field of medicine, and it appears to us, concluded the court, to be straining at a gnat to enter into a discussion of distinctions between a "practitioner of medicine" and a "physician."

Having regard to the various specialties in the field of medicine recognized by the general assembly, including naturopathy, and to the unwillingness of the defendant to accept the certificate of a naturopath, it may be that the defendant can make special provisions in its policies requiring that claims will be paid only when certified by practitioners who are licensed in the field of materia medica, major surgery, and etc. And they might except from their policies any liability arising out of, or concurrent with, the violation by a naturopath or other practitioner of the limitations of his profession. But there are no such limitations in the present policy. At most there is an ambiguity arising out of the use of the word "physician" when the defendants might have used a term of more limited significance.

In conclusion, the court said that, while this is not in any sense controlling, we may advert to the fact that it is a matter of common knowledge that the people who purchase sick benefit policies of the industrial type constitute a large proportion of the patrons of practitioners of such branches of healing as naturopathy, and that it is generally believed by such people that they are dealing with licensed practitioners of medicine. In this belief they are encouraged by legislation authorizing such practice. It would be unjust, under such circumstances, to deprive these people of contract rights by means of a limitation on the meaning of the word "physician" to exclude the types of medical practice which to them are acceptable. Accordingly the judgment in favor of the plaintiff was affirmed.—*Williams v. Capital Life & Health Insurance Company, 41 S. E. (2d) 208 (S. C., 1947).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in The Journal, Aug. 2, page 1198.

BOARDS OF MEDICAL EXAMINERS

Arkansas:* *Examination.* Texarkana, Nov. 6-7, 1947. Sec., L. J. Kosminsky, Texarkana.

Arkansas: *Eclectic.** Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

California: *Written.* Los Angeles, Aug. 25-28. *Oral.* Los Angeles, Nov. 8-9. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento 14.

District of Columbia:* *Endorsement.* Washington, Sept. 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 Municipal Bldg., Washington.

Georgia: Atlanta, Oct. 14-16. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Illinois: Chicago, Oct. 14-16. Supt. of Registration, Dept. of Registration and Education, Mr. Philip M. Harman, Springfield.

Indiana: *Examination.* Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

Kentucky: *Examination.* Louisville, Sept. 22-24. Sec., State Board of Health, Dr. P. E. Blackerby, 620 S. Third St., Louisville 2.

Minnesota:* St. Paul, Sept. 3-5. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

Mississippi: *Endorsement.* Jackson, Dec. 1947. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

Montana: Helena, Oct. 6-8. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

Nevada: Carson City, Nov. 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

New Hampshire: Concord, Sept. 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

New Jersey: *Examination.* Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico:* Santa Fe, Oct. 13-14. Sec., Dr. LeGrand Ward, 141 E. Palace Ave., Santa Fe.

New York: *Examination.* Albany, Buffalo, New York and Syracuse, Oct. 6-9, 1947. Sec., Dr. Jacob L. Lochner, Jr., Education Bldg., Albany.

Rhode Island:* *Examination.* Providence, Oct. 2-3. Chief, Division of Professional Regulation, 366 State Office Bldg., Providence.

South Carolina: Columbia, Nov. 10-12. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

Utah: *Reciprocity.* Oct. 8. *Examination.* Salt Lake Ctiy, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

West Virginia: *Examination.* Charleston, Oct. 2-4. Commissioner, Public Health Council, Dr. N. H. Dyer, State Capitol, Charleston.

Wyoming: *Examination.* Cheyenne, Oct. 6. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arizona: Sept. 16. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Colorado: *Examination.* Denver, Sept. 17-18. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

District of Columbia: *Examination.* Washington, Oct. 20-21. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 1. Final date for filing application is Oct. 16. Sec., Dr. W. M. Emmell, University of Florida, Gainesville.

Michigan: *Examination.* Ann Arbor and Detroit, Oct. 10-11. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

Minnesota: *Examination.* Minneapolis, Oct. 7-8. Sec., Dr. Raymond N. Bieter, 105 M. Hall, University of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 7-8. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, State Department of Health, Room 1009, State Capitol Bldg., Lincoln 9.

Oklahoma: Spring 1948. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, Sept. 6. Final date for filing application is Aug. 20. Sec., Board of Higher Education, Basic Science Examining Committee, Mr C. D. Byrne, University of Oregon, Eugene.

Tennessee: *Examination.* Memphis, Sept. 18-19. Sec., Dr. O. W. Hyman, 874 Uni [illegible]

Wisconsin: [illegible] ept. 27. Final date for filing application is Se [illegible] H. Barber, Watson and Scott Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

149:277-516 (May) 1947. Partial Index

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Response of Smooth Muscle to Stretch. E Bozler.—p 299

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Distribution of Sodium and Potassium in Oxygenated Human Blood and Their Effects on Movements of Water Between Cells and Plasma. Pauline M Hald, M. Tulin, T. S Danowski and others—p 340.

Sensitive Method for Assay of Insulin in Blood Evelyn Anderson, Erna Lindner and Virginia Sutton—p 350

Inhibitory Effect of Caronamide on Renal Elimination of Penicillin. K. H. Beyer, A. Kathrine Miller, H. F. Russo and others.—p 355.

Influence of Environmental Temperature on Dietary Requirement for Thiamine, Pyridoxine, Nicotinic Acid, Folic Acid and Choline in Chicks C A Mills, Esther Cottingham and Elizabeth Taylor—p. 376.

Effect of Mild Hyperthyroidism on Seasonal and Yearly Egg Production of Fowls with Advancing Age C. W. Turner and H L Kempster. —p 383

Factors Concerned in Control of Capillary Pressure as Indicated in a Circulation Schema H. C Bazett.—p. 389.

Excess Vitamin A Ingestion, Thyroid Size and Energy Metabolism. D. P. Sadhu and S. Brody.—p. 400.

Some Endocrine Influences on Renal Function and Cardiac Output. H L. White, P. Heinbecker and Doris Rolf—p. 404.

Alkaline Phosphatase Levels in Plasma and Liver Following Hepatectomy. M J. Oppenheimer and Eunice V. Flock—p 418.

Peripheral Vascular System and Its Reactions in Scurvy: Experimental Study. R. E Lee and Nina Z. Lee.—p. 465.

Thermal Balance of Men Working in Severe Heat. S. Robinson and S D. Gerking.—p 476.

Archives of Surgery, Chicago

54:365-482 (April) 1947

Newer Methods of Abdominal Drainage. W. W. Babcock—p. 365.

*Peritoneal Irrigation for Uremia Following Incompatible Blood Transfusion: Report of Case E. E. Muirhead, A B Small and R. B. McBride—p. 374.

Permanent Intubation of Thoracic Aorta. C A. Hufnagel.—p. 382.

*Surgical Treatment of Peptic Ulcer: Recent Experience at Los Angeles General Hospital H L Thompson and H. Prout—p 390.

Living Fascial Sutures in Inguinal Herniorrhaphy. E. A. Gaston. —p 414.

Sacral Agenesis: Report of Case A. Lichtor.—p 430

Abdominal Actinomycosis. E M Farris and R V. Douglas—p 434.

Progress in Orthopedic Surgery for 1945 X Infantile Paralysis C. E. Irwin.—p. 445.

Id.: XI. Infantile Paralysis Research J. A. Toomey.—p. 459.

Id: XII. Poliomyelitis Convalescent Treatment and Related Subjects. R L Bennett—p 476

Peritoneal Irrigation for Uremia Resulting from Incompatible Blood Transfusion.—Muirhead and his associates report a case of uremia following acute renal damage due to an incompatible blood transfusion The prognosis seemed poor until the procedure of peritoneal irrigation was instituted according to the technic of Frank, Seligman and Fine. The amount of urea cleared from the body by this procedure was comparable to that reported by these observers. The urea clearance was taken as a measure of the clearance of other substances. Overhydration constituted one of the main complications, as the kidneys were not able to discard water. This complication was accentuated by the use of Tyrode's solution and isotonic solution of three chlorides in the peritoneum. Recovery was associated with loss of water and salt from the body, while dextrose in distilled water was used for peritoneal irrigation. Substantial amounts of urea were obtained by this method, and the azotemia was greatly relieved. Subsequently the kidneys cleared large quantities of urea from the body, but polyuria was necessary, as the urea clearance remained depressed

Surgical Treatment of Peptic Ulcer.—Thompson and Prout report the results of surgical treatment of peptic ulcer in the Los Angeles General Hospital. The study covers the two and one-half year period from Jan 1, 1943 through June 30, 1945 During that time the diagnosis of peptic ulcer was made on 1,415 hospitalized patients. Of this group 1,108 patients, or 78 per cent, received medical treatment, and 307 patients, or 22 per cent, were treated surgically. This study was made by the method of sampling 100 unselected cases wherein acute perforation was the indication for surgical treatment and 50 unselected cases wherein elective operations were performed. The latter surgical procedures included partial gastrectomy, anastomotic operations and total gastrectomy. An overall mortality rate of 19.3 per cent does not appear too bad in the light of mortality figures of the past. The application of gastric resection, partial or total, in 86 per cent of the cases illustrates the trend toward radical operation in the treatment of peptic ulcer. Admittedly less effectual procedures such as gastrojejunostomy and gastroduodenostomy were, moreover, accompanied with higher mortality figures, being 25.5 per cent and 42.8 per cent respectively.

Journal of Bone and Joint Surgery, Boston

29:259-552 (April) 1947. Partial Index

Malignant Neoplasms Originating in Synovial Tissues (Synoviomata): Study of 32 Specimens Registered at the Army Institute of Pathology During the Wartime Period, 1941-1945. G. A. Bennett.—p 259.

March Fractures: Study with Special Reference to Etiologic Factors. J. G Donald and W. T. Fitts Jr.—p 297.

Arthrodesis of Hip for Ununited Fractures. A B Gill—p 305.

Whitman Reconstruction Operation for Complications of Fracture of Neck of Femur. A. Krida—p. 310.

Trochanteric Arthroplasty in Treatment of Ununited Fractures of Neck of Femur. P. D. Wilson—p. 313.

*Laminectomy and Foraminotomy with Chip Fusion: Operative Treatment for Relief of Low Back Pain and Sciatic Pain Associated with Spondylolisthesis. H. Briggs and S. Keats—p 328

Fixation of Bones by Plates and Screws L. T. Peterson—p. 335.

Arthroplasty of Elbow by Replacement of Distal Portion of Humerus with Acrylic Prosthesis. R. H. Mellen and G S. Phalen.—p. 348

"Latch" Graft: Combination of Inlay and Intramedullary Graft Which is Self Retaining. P. C. Rizzo and O. Lehmann.—p. 354.

Autonomic Control of Synovial Fluid Reaction. C. I. Reed, H. Joffe and N. R. Joseph.—p 370

Secondary Closure of Wounds Associated with Compound Fractures. J. O. Barr.—p. 376.

Evaluation of Cortical and Cancellous Bone as Grafting Material: Clinical and Experimental Study. L. C. Abbott, E. R. Schottstaedt, J. B deC. M. Saunders and F. C. Bost.—p. 381.

External Rotation of Leg in Poliomyelitis. S. C. Yachnin.—p. 415.

Symposium on Intervertebral Disk: Introduction. A. G. Davis—p. 424.

*End Result Study of Intervertebral Disk. R. E Lenhard—p. 425

*Ruptured Intervertebral Disk and Sciatic Pain. J. S. Barr.—p. 429.

Disk Factor in Low Back Pain With or Without Sciatica. J. G. Love. —p 438

*Pathologic Studies of Intervertebral Disks. C. Eckert and A. Decker. —p 447.

Analysis and Differentiation of Low Back Pain in Relation to Disk Factor. A. Steindler.—p 455

*Anatomicophysiologic Aspects of Injuries to Intervertebral Disk. V. T. Inman and J. B deC M. Saunders.—p. 461.

Laminectomy and Foraminotomy.—Briggs and Keats treated 18 patients (8 females and 10 males aged between 13 and 53 years) surgically for the relief of backache and leg pain associated with spondylolisthesis In 9 patients who presented no history of leg pain, the operation consisted in excision of the unfused laminas followed by a modified chip fusion. The second group of 9 patients included those who had pain of sciatic radiation in addition to low back pain indicative of nerve root involvement; in these patients the operation consisted in laminectomy, intervertebral foraminotomy and surgical fusion. The technic of the operation was concerned with two principal problems: first, stabilization of the weak link in the spinal column to relieve tension and strain on the associated muscles and ligaments and to prevent further progression of the subluxation and, second, relief of the nerve root oppression responsible for the sciatic pain. All the 9 patients of the first group were relieved of pain and were able to return to work. Nerve root pressure was accounted for by a protruded intervertebral disk in only 1 of the 9 patients of the second group; the remaining 8 patients were relieved of pain when the involved intervertebral foramens were unroofed. The greatest permanent benefit and the most dramatic relief of pain is offered by a combination of laminectomy, intervertebral foraminotomy and chip fusion.

End Result Study of Intervertebral Disk.—Lenhard studied 843 patients operated on for removal of an injured intervertebral disk. Five hundred and sixty-six (67 per cent) of the patients were men and 277 (33 per cent) were women. The operation afforded good results in 67.5 per cent of the patients examined. In those not examined but surveyed by questionnaire, apparently good results had been obtained in 59.5 per cent. Twenty patients required multiple operations for recurrences in a series of 147 who returned for examination. Roentgenographic interpretations are not reliable for accurate localization of the lesion.

Ruptured Intervertebral Disk and Sciatic Pain.—Barr reports the results of operations on 380 patients for ruptured intervertebral disk pressing on one or more of the nerve roots of the lumbosacral plexus and causing low back and intractable sciatic pain during the five year period 1939 to 1943. End results were obtained for 139 patients on questionnaire only and for 95 patients on questionnaire and check-up examinations, these 234 patients include 102 with spine fusion and 132 without spine fusion. Comparison of the results in these two groups seems to indicate a modest but definite superiority of the results in fused cases over the unfused ones when consideration is given to the factors of back pain and weakness, leg pain and weakness, and return to the type of work performed before the disability. One patient who had a spine fusion died of massive pulmonary embolism twenty-seven days after the operation. The localization of ruptured intervertebral disk by contrast myelography and the technic of its removal by partial laminectomy have become standard procedures. The thesis that every patient should have a spine fusion done at the time of laminectomy is tenable. Conservative treatment should be tried for a time before resorting to operative intervention. The principles of rest and immobilization, adequate sedation during the acute phase of the process and later protection of the lower part of the back from undue strain and postural rehabilitation appear to be the essential parts of a conservative regimen.

Pathologic Studies of Intervertebral Disks.—Eckert and Decker compared 182 intervertebral disks partially removed from 166 patients at operation with 40 lumbosacral intervertebral disks removed completely with their adjacent vertebral bodies from cadavers of different age groups at postmortem. It was apparent that the difference was in number rather than in kind. The principal changes encountered consisted of extensions of the tissue of the nucleus pulposus into the cartilaginous plate, vascularization of this defect, scarring with vascularization of the annulus fibrosus and nucleus pulposus, and granular degeneration considered the result of desiccation in the nucleus pulposus. At the time of the operation the disk was described as herniated, bulging or softened. No significant microscopic differences were found in the three groups. Follow-up studies on the surgical cases show good results in 86.7 per cent. The best results were obtained in those cases in which the disk was described at operation as herniated. No relation appears to exist between microscopic findings and end results.

Injuries to Intervertebral Disk.—Inman and Saunders divide their patients into three categories: 1. Patients with backache and local signs and symptoms of injury to the vertebral ligamentous structure presenting radiating pain, deep in character, extending down one or both extremities. Such patients should be considered as suffering from mechanical derangement of the spine and should be treated by immobilization and support. 2. Patients whose symptoms are identical with those found in the first group but who in addition give definite evidence of nerve root compression. Pain is relatively as prominent a phenomenon as the evidence of compression. Treatment should be directed toward the relief of pressure to prevent permanent damage to the affected nerve root. After removal of the herniated or displaced disk, additional measures are necessary to protect the injured and still painful ligamentous structures. 3. Patients whose symptoms of backache may be mild or lacking and in whom radiation of pain to the extremity is not extensive but signs of nerve compression are prominent. There is muscle weakness with atrophy, loss of sensation over the appropriate dermatome and reflex changes. Relatively few cases of herniated intervertebral disk fall in this category, but many of the spinal cord tumors do. Removal of the pressure agent and decompression of the nerve may be followed by almost complete dramatic recovery.

Journal of Experimental Medicine, New York

85:441-558 (May) 1947

Studies on Streptococcal Fibrinolysis. In Vitro Production of Fibrinolysin by Various Groups and Types of Beta Hemolytic Streptococci; Relationship to Antifibrinolysin Production. Commission on Acute Respiratory Diseases.—p. 441.

Neoplastic Potentialities of Mouse Embryo Tissues. Tumors Elicited from Gastric Epithelium. W. E. Smith.—p. 459.

Metabolism of Amino Acids and Casein Digest in Phlorhizinized Dogs. W. B. Hawkins, J. W. McKee, G. M. B. Hawley and A. J. Kummer.—p. 479.

Occurrence During Acute Infections of Protein Not Normally Present in Blood. IV. Crystallization of the C-Reactive Protein. M. McCarty.—p. 491.

Studies on Flexner Group of Dysentery Bacilli. Detoxification of Shigella Paradysenteriae by Means of Periodic Acid. W. F. Goebel.—p. 499.

Electrophoretic Study of Antiviral Sera. H. Koprowski, G. Richmond and D. H. Moore.—p. 515.

Antibacterial Properties of Sulfur. Julia T. Weld and Anne Gunther.—p. 531.

Antirickettsial Effect of Thionine Dyes. Use of Methylene Blue and Toluidine Blue to Combat Experimental Tsutsugamushi Disease (Scrub Typhus). O. L. Peterson and J. P. Fox.—p. 543.

Medical Annals of District of Columbia, Washington

16:173-230 (April) 1947

Studies of Pneumonias in Childhood. J. Rose, P. D. Doolan and Sally MacDonald.—p. 173.

Obligation of the Physician to Psychiatry. F. Klein.—p. 176.

Diathermy Machines. A. C. Stephens.—p. 180.

Intracranial Cholesteatoma, Epidermoid or Pearly Tumor. Report of a Case. F. E. De Angelis and Elizabeth Sammis De Angelis.—p. 183.

16:231-286 (May) 1947

Properties and Clinical Applications of Streptomycin Therapy. J. A. Kolmer.—p. 231.

Diabetes Mellitus in Children. J. W. Lindsay, E. C. Rice, M. A. Selinger and J. F. Cassidy.—p. 237.

Rheumatic Fever: Current Considerations. M. P. Schultz.—p. 243.

Modern Psychiatry in General Practice. L. M. Dub.—p. 247.

Medicine, Baltimore

26:115-220 (May) 1947

*Clinical Detection of Genetic Carriers of Inherited Disease. J. V. Neel.—p. 115.

Scientific Principles, Methods and Results of Chemotherapy, 1946. E. K. Marshall Jr.—p. 155.

The Viral Pneumonias and Pneumonias of Probable Viral Origin. H. A. Reimann.—p. 167.

Detection of Genetic Carriers of Inherited Disease.—According to Neel two classes of people transmit inherited disease to their progeny: (*a*) those who actually have the disease and (*b*) those who appear normal but whose genetic constitution includes determiners for the disease. "Genetic carriers" are those who may transmit an inherited disease to their progeny without themselves showing it. The carriers of the majority of inherited diseases cannot at present be identified clinically and are known only through the results of a progeny test. However, the transmitters of certain inherited diseases exhibit minor departures from the norm which make it possible to identify them clinically with varying degrees of certainty. Of the twenty-two diseases mentioned as manifestations of carriers, eleven affect the blood or skin. This disproportionate representation of dermatology and hematology is probably not entirely due to chance but reflects the ease with which blood and skin can be studied. From the standpoint of the present accuracy of identification of the carrier state, the diseases which have been considered fall into three groups. For five of the diseases described—gout, xanthomatosis, thalassemia, sickle cell anemia and congenital hemolytic jaundice—the dia a carrier sta ay

Lancet, London

1:659-698 (May 17) 1947

Child Guidance in Old Age J. M. Mackintosh—p 660.
Biochemistry of Inflammation. V. Menkin—p 661.
Physical Basis of Continuous Intravenous Infusions J. N. Walton.—p 662.
*General Paralysis of the Insane, Treated with Penicillin Report on 7 Cases R H. F. Smith.—p 665.
Diphtheria and Streptococcal Carriers in London School Children. Members of the Staff of the Public Health Department, London County Council—p 668
*Treatment of Thyrotoxicosis with Propyl Thiouracil. A Wilson and J Goodwin—p 669.
Treatment of Fistula in Ano J. P. Lockhart Mummery—p 671.
Neoantergan in the Treatment of Urticaria. Report of 14 Cases. R. B. Hunter—p 672.
Shrapnel Shot Through Placenta. B. Zondek.—p 674
Paludrine in Relapsing Benign Tertian Malaria. Further Trials R. D. C. Johnstone.—p 674.

Penicillin in Dementia Paralytica.—Smith administered calcium penicillin by intramuscular injection to 7 patients with dementia paralytica. Four patients had a first course of 20,000 units every three hours day and night for a total of 1,280,000 units, followed at an interval of a month or longer by a second course of 50,000 units every four hours day and night for a total of 2,400,000 units Two patients were given two courses of 50,000 units every four hours day and night until a total of 2,400,000 units had been given. The second course was given a month after the end of the first One patient had one course of treatment of 2,400,000 units. No penicillin was found in the spinal fluid with such dosage. A skin reaction developed in case 2, febrile reactions in cases 1 and 3, and Jarisch-Herxheimer reactions in cases 2 and 6. Serologic results in the spinal fluid were improved with regard to cells and protein, but the colloidal gold and Wassermann reactions were more resistant. The blood Wassermann reactions were unchanged. Clinical results have been encouraging: 4 patients have made a social recovery, 1 has greatly improved, 1 is not improved, and 1 died.

Propyl Thiouracil in Thyrotoxicosis.—Wilson and Goodwin summarize their experience with propyl thiouracil in treating 16 patients with thyrotoxicosis. The results with propyl thiouracil have shown that this drug is about four times as potent as methyl thiouracil. The response to propyl thiouracil is not more rapid than that to methyl thiouracil, and the maintenance dose is slightly greater for propyl thiouracil. Thyroid hyperplasia has not been observed with the doses used. Toxic effects on the skin were seen in 1 patient after seven weeks' treatment with propyl thiouracil. There is no evidence that propyl thiouracil has any particular advantage over methyl thiouracil.

Revue da la Tuberculose, Paris

10:685-924 (No. 11-12) 1946

Doctrine and Motive. E. Bernard.—p 685.
*Hazard of Toxicity of BCG Vaccine when Given to Infected Persons. L Nègre and J. Bretey—p. 694.
Roentgenologic Localization of Suppurating Intrapulmonary Cavities and Their Drainage by the Endobronchial Route. C. Mattei, M. Tristani and A Barbe.—p 704.
Volume and Ventilation of Lungs Function Test. G. Birath—p. 717.

Toxicity of BCG Vaccine for Infected Persons.—According to Nègre and Bretey the oral introduction of BCG vaccine in three divided doses of 0 01 Gm each or in a single dose of 0.05 Gm. given by mouth to children and adults for prophylactic inoculation does not produce any immediate or delayed untoward reactions. BCG given in these doses has no effect on the course of tuberculous lesions in animal and man. It cannot activate latent foci in allergic persons. General or focal reactions are in general not associated with the treatment of the same types of patients with subcutaneous or intradermal injections of BCG. Mild and temporary rise of temperature of less than 1 degree may be observed in certain patients with tuberculosis during the days following these injections, but the lesions of these patients are not activated. Focal and general reactions can be produced in tuberculous patients with subcutaneous injections of larger doses (more than 1 mg.) than those used for vaccination. Repeated injections seem to make these reactions worse. Patients with pulmonary tuberculosis were not benefited nor was their condition made worse by the treatment with cutaneous scarifications which were impregnated with BCG. Unnecessary inoculation with BCG, particularly by the oral route or by cutaneous scarifications, will not produce toxic symptoms in allergic persons or in persons with latent lesions.

Schweizerische medizinische Wochenschrift, Basel

77:395-418 (April 5) 1947. Partial Index

Exposure of Heart by Osteoplastic Thoracic Flap. K. Lenggenhager.—p. 395.
*Intestinal Form of von Recklinghausen's Neurofibromatosis. E. Lindenmeyer—p 396.
Icterus Gravis of Pregnancy and Spontaneous Symmetrical Fractures (Syndrome of Milkmann). D. Stucki—p. 398
Pathogenesis of Cardiac Asthma F. Herzog—p. 404.
Electrical Accident as a Peculiar Biologic Phenomenon. S. Jellinek—p 407.
Sympathetic Regulation of Fibrinolysis. T. Halse.—p. 411.

Intestinal Form of von Recklinghausen's Neurofibromatosis.—According to Lindenmeyer, intestinal neurofibromatosis as the only localization of von Recklinghausen's disease is comparatively rare. The patient was a man in whom in the course of the first laparotomy a tumor and 20 cm. of the small intestine were removed. Several years later the presence of numerous nodules on the small and large intestine made removal of all of them impossible, but three pedicled tumors on the descending colon were extirpated, and microscopic examination disclosed that they were neurofibromas.

Deutsche medizinische Wochenschrift, Stuttgart

71:41-80 (June 14) 1946. Partial Index

Observations on So Called Field Nephritis During After-War Period H. Assmann—p. 45.
*Hemorrhagic Reactions in Typhoid Following Vaccination Against It. R. Rössle—p. 48.
Theories on Origin of Cancer and Their Foundations. W. Schönfeld—p. 52
Subthreshold Myocardial Lesions D. K. Spang.—p. 56.
*Effect of Strophanthin on Coronary Blood Perfusion Considered in Connection with Sensory Manifestations in Heart Region. W. Schmidt.—p. 58.

Hemorrhagic Reactions in Typhoid After Prophylactic Immunization.—The recent typhoid epidemic in Berlin gave Rossle an opportunity to observe the effect of prophylactic vaccination against it. His aim was to determine whether the subcutaneous introduction of killed bacilli exerts any influence on the character, course and outcome of typhoid. A characteristic aspect of those who had been vaccinated was the appearance of hemorrhages at the sites of the typhoid process in intestine, mesentery, spleen and the typhoid granulomas of the liver or at sites of nonspecific sensitization such as the intestinal wall or cerebral meninges. The fatal hemorrhages in patients in whom vaccination against typhoid was performed when the patient was already in the incubation period or typhus was just becoming manifest were especially noteworthy. The author regards them as manifestations of a rapidly occurring change in the endothelial reactions at the sites in question and thinks that they belong to the large group of partially nonspecific pathergias. They are not merely a summation of toxic effects from the endotoxins of the infection with those of the vaccine. The important question of how long before and after infection vaccination against typhoid can be regarded as dangerous remains unsolved.

Action of Strophanthin on Coronary Blood Perfusion.—Schmidt found that some patients complain of a sensation of oppression in the heart region following injection of strophanthin. He found that strophanthin produces in many cases reduction in coronary blood perfusion but that this reduction is reversible and is generally followed by increased coronary blood perfusion. The temporary decrease in coronary blood perfusion is due to changed energy conditions in the myocardium and to increased irritability of the sympathetic nervous system, particularly of the vagus. The sensory manifestations in the heart region following the injection of strophanthin are sequels of changes in the energy exchange in the myocardium and of its effect on the vagus. The increased coronary blood perfusion usually subsides in from thirty to forty-five minutes. The G and K strophanthins have identical effects on coronary blood perfusion.

Book Notices

Techniques and Procedures of Anesthesia. By John Adriani, M.D., Director, Department of Anesthesia, Charity Hospital of Louisiana, New Orleans. Fabrikoid. Price, $6. Pp. 401, with illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

This is the third book on anesthesia published by Dr. Adriani. "The Pharmacology of Anesthetic Drugs" (1941) is, as stated in the preface, "an outline limited to fundamentals." "The Chemistry of Anesthesia" (1946) is a consideration in three parts, written in the usual narrative style, of the inorganic and the organic chemistry of drugs used by the anesthetist, the third part being devoted to a discussion of changes in biochemistry accompanying anesthesia.

The present volume, on technics and procedures, reverts to the style of the author's first volume. Again, in the words of the preface, "an attempt has been made in this outline not only to enumerate the technical details of anesthesia but the associated reasons for executing them in the manner described." To avoid disappointment, the prospective purchaser must realize that the book is just that: an outline which enumerates only. Nearly all the various types of anesthesia used in modern practice are covered. Methods of mitigating undesirable effects of each are enumerated. Thirty-six pages are devoted to artificial respiration and inhalational therapy.

The outline style leads to unavoidable dogmatism, and the book thus represents the author's views. In general, however, these are views which are rather widely accepted at this time. It may be doubtful whether such a book is acceptable as a teaching manual for graduate students. As a quick work of reference for undergraduates or technicians its appeal may be greater. The index is adequate. Numerous well placed simple diagrams and photographs clarify the brief outlines of many subjects. The volume is valuable as a quick means of referring to the opinion and practice of the author. Used after mastery of his other two volumes, this book will be found quite adequate by the student. It must be realized that the methods set forth are those of the author, which are in use at Charity Hospital, New Orleans, in 1947.

The Anatomy of the Nervous System: Its Development and Function. By Stephen Walter Ranson, M.D., Ph.D. Revised by Sam Lillard Clark, M.D., Ph.D., Professor of Anatomy, The Vanderbilt University School of Medicine, Nashville. Eighth edition. Cloth. Price, $6.50. Pp. 532, with 417 illustrations. W. B. Saunders Co, W. Washington Square, Philadelphia 5, 1947.

This has been the leading textbook in its field since it first appeared in 1920. An epoch in neurologic teaching and research began at about that time, and the late Professor Stephen Walter Ranson played a leading part in its development. His influence has been felt throughout the country, not only in the more limited sphere of the nervous system, but in all aspects of anatomy, which he so ably helped build into a highy functional and meaningful subject for the student of medicine. During his lifetime he contributed six revisions on this book, earnestly striving to incorporate significant advances and at the same time avoid emphasis of insignificant details. It is remarkable that even after he had ceased to instruct first year students and had become engrossed in highly technical aspects of research, he was able to keep the beginner's point of view in his writing.

It is with universal approval that those who knew Professor Ranson learned that one of his students and colleagues, Professor Sam L. Clark, had agreed to assume the task of further revisions of the Anatomy of the Nervous System. The eighth edition should please all who were devoted to previous ones, for it has maintained the good characteristics while incorporating worth while reorganization and additions.

One of the principal changes in this edition is the shift of consideration of the gross anatomy and of the meninges and blood vessels of the central nervous system to the forward part of the book. From a pedagogic point of view this is a change of considerable value. Consideration of histogenesis of neurons, of neuroglia and of the peripheral nervous system follows this and precedes the detailed structure and function of intrinsic spinal cord and brain structures. Numerous minor changes have been made throughout these chapters of the text, and new illustrations have been added.

One of the important parts of the book is the atlas of brain sections and the accompanying descriptions. This has been improved by addition of a series of parasagittal sections through the brain stem. This part of the book adds a great deal to its value for the student who is learning neuroanatomy, but it is likewise useful to any one who wishes to use the book for reference. There is no doubt that the volume will continue to meet with favor among the members of the medical profession.

Elsevier's Encyclopædia of Organic Chemistry (in 20 Volumes). Edited by E. Josephy and F. Radt. Volume 14: Tetracyclic and Higher-Cyclic Compounds. Series III: Carboisocyclic Condensed Compounds. 1940. Cloth. Subscription Price, $15; Serial Price, $52.50; Single Volume Price, $60. Pp. 711. Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, [1946].

The proposed set of twenty volumes represents an attempt to produce a "standard work in English to give complete information on all chemical and physical properties and on the most important physiological properties of organic compounds."

Volume 14, the first of the projected series to appear, covers the tetracyclic and higher-cyclic compounds of organic chemistry, including sterols and triterpenes. Completed in 1940, it was delayed because of the war. This unfortunately aggravates, in the present case, a defect that is inevitable in large works of this sort. They can never be very up to date, and in the present volume only the literature through 1936 is thoroughly covered with the exception of a few late references. Since these volumes are scheduled to appear at intervals of about six months, it is hoped that future volumes will carry more up to date reference lists.

Sufficient emphasis has been placed on the physiologic and biologic actions of the compounds listed to warrant its use by other than chemists to whom the series will be of primary interest. Pharmacologists, especially, will find inspiration in such pages as 413 and 494, where the interesting possibilities in higher-cyclic compounds are suggested by collections of skeleton formulas. They indicate that it will be a long time before research workers exhaust the therapeutic possibilities of organic chemistry.

Like the "Organische Chemie" of Beilstein, these volumes are to be divided into three sections corresponding to the aliphatic, carbocyclic and heterocyclic series of organic compounds. From this division a systematized plan of presentation is followed. No new systems of nomenclature are to be used. Each volume is to have a subject and a formula index. The indexes are to contain, besides the individual compounds, lists of compounds similar in structure or function, e. g., compounds with triple bonds, carcinogens and hormones.

In this, the first, volume to appear are included data on many carcinogenic agents, sex hormones, naturally occurring compounds, vitamins and provitamins, cardiac glycosides, bile acids and others which fall in this particular organic classification. Besides a table of contents for each ring system, data are included on occurrence, formation, preparation, reactions, detection, physical and chemical properties, derivatives, reaction schemes with many structural formulas, and literature, subject and formula indexes.

The volume contains a huge fund of information and along with the rest of the series is probably destined to become a primary source of information. English scientific literature needs such an encyclopedia.

Principles and Practice of Obstetrics. By Joseph B. De Lee, M.D., and J. P. Greenhill, M.D., Attending Obstetrician and Gynecologist, the Michael Reese Hospital, Chicago. Ninth edition. Cloth. Price, $10. Pp. 1,011, with 860 illustrations. W. B. Saunders Co., W. Washington Square, Philadelphia 5, 1947.

De Lee's Obstetrics, as it has been referred to so long and so warmly, appears again in its ninth edition under the skilful direction of J. P. Greenhill. It is true that this book was recognized as a classic during De Lee's lifetime when he was the sole author. The fact that it goes on under the momentum of his authorship, still acclaimed, indicates its stature more clearly than ever before.

Greenhill has made many well chosen additions, and necessary changes in accordance with current obstetric advances. Since he assumed direction of the revisions of this book his choice of subjects to keep the book closely up to date has been an especially noteworthy feature. In the eighth and this ninth edition, the book has been largely rewritten, but nothing of De Lee's fluid and easily understandable style has been lost. One innovation in format, questioned at first, is the double column on each page. In a book as large as this one has always been, the double column setting seems to make easier reading when one becomes accustomed to it. The paper is excellent, the printing clear and even, and the binding well done.

Several new chapters have been added, and old ones have invariably been changed to add accepted new findings or procedures. Analgesics and anesthetics in labor and delivery are an example. The subject of blood transfusions during labor could perhaps be amplified to advantage. The modern treatment of puerperal infection with sulfonamides and penicillin is thoroughly described and directed. Some illustrations have been added, although these were scarcely needed, as the book has always been noted for its profusion of splendid pictures. Greenhill adheres to De Lee's preference for mediolateral episiotomy, but for those who utilize the median incision a limited set of illustrations of the latter would be helpful for practice and for teaching.

One of the many features should be referred to, simple as it is. The index includes one important teaching item usually not found in an index. In addition to a careful indexing of textual subject matter, the illustrations are also tabulated by subjects. For quick reference and to distinguish these, the page numbers are set in different type, bold face for text, italics for illustrations. The book is to be strongly commended to all who have any interest in obstetrics, to students, to practitioners and to specialists without distinction.

Russian-English Technical and Chemical Dictionary. [Compiled] by Ludmilla Ignatiev Callaham. Fabrikoid. Price, $10. Pp. 794. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W. C. 2, 1947.

Compilation of this dictionary was begun to prepare "a convenient reference for chemists and chemical engineers in both the chemical and process industries." This was certainly achieved successfully. However, since no one field of science or technology is sufficient unto itself and enclosed within rigid ines of demarcation—rather, the boundary lines between it and other fields from which it of necessity borrows and with which it collaborates are blurred and indefinite—the inclusion of terms in this work was broadened to give a quite comprehensive coverage of many related fields, such as pharmacy and botany. It is to be hoped that the dictionary will be expanded in the future, preferably to include more purely scientific terms, those of value, for instance, to readers of medical and biologic literature.

The author points out a fact that will be conceded by any one who has dealt with foreign languages, namely that it is necessary to have at least an elementary knowledge of Russian to use the dictionary. For instance, to be specific, an English speaking person without knowledge of Russian would encounter difficulty in looking up nouns and verbs; the former, of course, frequently occur in the Russian text in other than the nominative case in which they are given in the dictionary, and the latter in another form than the infinitive which appears in the dictionary.

The preface of the book is helpful in that it explains such points as handling translation of "Russianized" words, with examples. A Russian alphabet with transliteration, a table of common Russian technical word endings and a list of the reference sources on which the dictionary is based are carried at the front of the book.

The Head, Neck, and Trunk: Muscles and Motor Points. By Daniel P. Quiring, Ph.D., Head of the Anatomy Division, Cleveland Clinic Foundation and Associate Professor of Biology, Western Reserve University, Cleveland. Fabrikoid. Price, $2.75. Pp. 115, with 103 illustrations. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1947.

This book is a companion volume to the author's "The Extremities." Its purpose is to portray in diagrams and condensed descriptions the striated muscles of the head, neck and trunk. It offers an exact account of the skeletal attachments, nerve and chief arterial supply, and functions of these muscles. The diagrams are based on original dissections and on references to the anatomic literature. The presentation has the advantage of clarity. Each muscle is shown in a single diagram together with its concise description. It is a fine example of limiting the nonessentials. It permits a rapid survey of skeletal-muscular anatomy. The line drawings are excellent. The general motor points of the face are shown in a single illustration. As a quick and handy guide it will undoubtedly find considerable usefulness. Medical students particularly will find this work helpful for review purposes. It should be valuable to students and to physical therapists. Surgeons will find it a useful reference work. Physical education departments in colleges and universities offer courses in human anatomy sometimes with actual dissections. This book is suited to such a course.

Tumores y seudotumores de la mama: Estudio de investigación experimental, su profilaxis y tratamiento. Por el Dr. Jacinto Moreno. Paper. Pp. 142, with 40 illustrations. Lopez & Etchegoyen, S. R. L., Junin 863, Buenos Aires, 1946.

This rather detailed monograph on tumors of the breast is well presented, is profusely illustrated and reveals a studious understanding of the subject matter. Although some of the ideas presented are at variance with the concepts generally accepted in this country, the rationale of the conclusions reached by the author is of interest. His classification of breast tumors discussed is relatively simple and avoids the complexities of some classifications. His discussion of the hormonal influence in the development of cancer is concise and to the point. It agrees in the main with the concepts of Novak and Geschickter and others. The author is emphatic in his statement that, based on his observations, all malignant breast tumors metastasize within two years, irrespective of the type of therapy used. This, of course, will not be universally accepted. He condemns breast amputations in suspected lesions, such as the mastitides, or as a prophylactic measure in questionable cases. A complete and exhaustive study of the patient prior to surgical intervention will frequently reveal, he states, coexistence of tumorous growths elsewhere in the body; if so, surgery is definitely contraindicated. The author concludes that all patients with cancerous growths of the breast show some type of endocrinopathy with abnormal metabolic changes; the endocrine deficiency is related to the sex organs; the patients show hyperglycemia, increased blood phosphorus and decreased blood calcium contents. The monograph fails to include any statistical studies to corroborate these findings, nor are any biochemical studies reported to confirm the author's statements.

Your Rheumatism and Backaches. By Joseph D. Wassersug, M.D. Cloth. Price, $2.50. Pp. 310. Wilfred Funk, Inc., 227 E. 44th St., New York 17, 1947.

Dr. Wassersug presents in this handy volume excerpts from a limited store of contributions. The book contains numerous case reports culled from the literature, and some controversial aspects of the problem are presented. Many a senior medical student could gather twenty or more articles and write a similar book in his own room without seeing one case of arthritis.

Diseases of the Nose and Throat. By Charles J. Imperatori, M.D., F.A.C.S., Consulting Laryngologist, Harlem Hospital, and Herman J. Burman, M.D., F.A.C.S., Director of Department of Otolaryngology, Harlem Hospital, New York. Third edition. Fabrikoid. Price, $12. Pp. 576, with 480 illustrations. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia 5, 1947.

In this edition the authors have somewhat altered their format, utilizing the popular two column style. One is impressed by an attempt to present in terse, almost outline, form the numerous diseases associated with the nose, throat and larynx. Certain chapters, such as those on roentgenology and laboratory procedures, have been presented by competent collaborators. There are a number of specific objections which could constructively be stated about the book. For the undergraduate much of the material does not fit into his needs, and for the postgraduate in rhinolaryngology it is not complete enough. While it is clear that some sections of the book may be of value to the trained specialist, it will take other editions to allow the authors to bring more uniformity into the work generally and to amplify areas that have been too briefly stated for a purposive study. Attempts at specific review of subjects where brevity is the keynote is admirable but not always practical. Pictorial material in the book could be greatly enhanced and its therapeutic content sifted in the light of modern concepts.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

FOOT BATHS IN LOCKER ROOMS

To the Editor:—What is the present consensus with regard to the value of foot baths in locker rooms, swimming pools and gymnasiums for preventing the spread of ringworm? A few years ago sodium hypochlorite solution was recommended; is this still considered of value? Also there are commercial solutions on the market. Is there much chance of skin irritation from any of these foot bath solutions?

M.D., Illinois.

Answer.—There is much less use of antiseptic foot baths in locker rooms, swimming pools, and similar places in attempting to prevent ringworm of the feet now than formerly. Sodium thiosulfate 10 per cent is much less used. Sodium hypochlorite 1 per cent seems to have more adherents, but the solution should be changed probably every forty-eight hours. Little skin irritation has been seen from any of these foot bath solutions. A study of dermatophytosis in industry by the U. S. Public Health Service showed that there was no value to foot baths and copper impregnated flooring in preventing the spread of tinea pedis. The National Research Council in 1944 recommended that foot baths for the prevention of tinea pedis should not be used by our armed forces.

In a paper read before a Congress on Industrial Health, Schwartz recommended the use of individual wooden sole bathing slippers to be worn in and out of shower baths and the thorough drying of the feet, especially the interdigital spaces, as the logical method of preventing the spread of tinea pedis in locker rooms and shower baths. If commercial solutions on the market for use in foot baths are of sufficient concentration to kill fungi on the feet in the short time that the feet are immersed or sprayed by them, they are likely sources of skin irritation.

DERMATITIS FROM ENDOCRINE PREPARATION

To the Editor:—A woman was given for menopausal symptoms a pink liquid smelling like paregoric that acted physiologically like the hormones of pregnant mare's urine. She developed a red, dry, scaling dermatitis of the face. Can the medicine be the cause of the dermatitis?

M.D., Pennsylvania.

Answer.—The preparation which was administered in the form of a pink liquid would probably be an elixir containing extracts of the urine of pregnant mares containing the fractions with estrogenic activity. Such extracts contain a number of estrogenic substances, although the chief activity is due to estrone, with some effect contributed by the weakly estrogenic steroids such as beta estradiol, equilin and hippulin. There is little evidence available which would indicate that human beings are sensitive to these steroid compounds, especially when taken by mouth. It is barely possible that the patient reacted to the medication by increased nervousness and tension, a not uncommon reaction following the administration of rapidly absorbed estrogens. If this occurred it is possible that the rash might be considered of neurogenic origin. In view of the relative impurity of these extracts, however, the patient could have been allergic to one of the contaminants in the preparation. The administration of a purer oral estrogen is advised to gain a better understanding of the patient's response.

EARLY GLAUCOMA

To the Editor:—Will you please tell me the early symptoms of glaucoma? I should like to know more about how to diagnose glaucoma and the latest treatment.

M.D., Oklahoma

Answer.—Chronic simple glaucoma manifests itself earliest in an enlargement of the blind spot, as shown by a test of the central fields. Usually serious loss of the vision of one eye has occurred before the patient knows of any trouble at all. The tonometer is necessary to determine the exact tension of the eye. Low tensions can many times be controlled by pilocarpine; physostigmine is needed in more severe cases; doryl is a newer drug which is effective in many cases. As soon as the central fields begin to get worse, operation (trephining, cyclodialysis, iridodenclesis) must be resorted to and are quite uniformly successful.

BISMUTH SALTS IN TREATMENT OF RHEUMATOID ARTHRITIS

To the Editor:—I have read with interest the several reports published in the last several years concerning the use of aqueous bismuth solutions intravenously for the treatment of undulant fever and follicular tonsillitis, reference being made to its safe use therein. Also a report using 0.5 cc. intramuscularly at monthly intervals for arthritis. Would it be logical to assume that the action of bismuth intravenously is any different from its use intramuscularly? Are there any reports pertaining to the use of bismuth intravenously or intramuscularly in the therapy of rheumatoid arthritis, using the bismuth compound in place of gold salts?

Clifford W. Atherton, M.D., Fairview, Ill.

Answer.—In an effort to find an equally effective, less toxic preparation than gold salts in the treatment of rheumatoid arthritis, Tarsy (1941) used colloidal bismuth, also colloidal platinum and selenium. Injections of these colloids into a few patients "gave insufficient promise of therapeutic usefulness" and were therefore not continued. Colloidal gold was more effective.

Also as a possible substitute for gold salts Douthwaite (1944) independently used intramuscular injections of bismuth salicylate (200 mg. doses repeated weekly for ten weeks). Toxic reactions did not occur. Of 12 patients with rheumatoid arthritis so treated significant improvement resulted in 6. It was concluded that bismuth salts were less toxic and less effective than gold salts. Relapses occurred more quickly than with gold salts. Gold resistant arthritis was considered unlikely to benefit from bismuth. Bismuth was "indicated only for rheumatoid arthritic patients who show intolerance, whether physical or mental, to gold."

Because injections of sodium bismuth tartrate (a water soluble salt of bismuth) appeared to relieve yaws with its "rheumatic-like" manifestations, Hall (1944) used such injections for a variety of conditions, chiefly rheumatoid arthritis but also for osteoarthritis, "arthritis deformans" and even Paget's disease. Injections were given intramuscularly (generally intragluteally) every four to eight weeks for a variable number of doses (totaling not more than 12 grains [0.78 Gm.]) each dose being ½ to 1 grain (0.032 to 0.065 Gm.). Serious toxic results were not noted. The diagnostic terminology used was not clear, and the illustrative case reports were so brief as to be of little value. Statistical results were not given. Hall merely stated that "improvement of varying degrees should be expected in at least 60 per cent of cases."

In a second report published a year later (1945) Hall again recommended this treatment, chiefly for rheumatoid arthritis, in small doses (½ grain) given by intramuscular injection every four to six weeks for a total of six injections. No serious toxic effects were noted as a result of "thousands of doses, but overdosage sometimes produced exacerbations of articular symptoms. Again no statistical or clinical proof was offered to support the author's impressions as to the effectiveness of this treatment. Although toxic reactions from these doses were not reported, bismuth, being a heavy metal, may and sometimes does produce toxic reactions in syphilitic patients so treated. "Pharmaceutic arthralgia", or articular pains with swelling ("paratherapeutic arthritis") may occur (Hollström). In about 10 per cent of one group of syphilitic patients "bismuth hepatitis" developed; it was generally transient and nonfatal but occasionally fatal (Kulchar and Reynolds). Stomatitis, pharyngitis, fever, leukocytosis and albuminuria may occur from overdosage (Seifter and McDonald).

Intramuscular injections are considered less toxic than intravenous injections of bismuth which result in the rapid absorption of relatively large amounts. Water soluble compounds are more toxic than colloidal compounds.

In conclusion it remains to be shown that preparations of bismuth are of value in the treatment of rheumatoid arthritis.

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Kulchar, G. V., and Reynolds, W. J.: Bismuth Hepatitis: A Survey of 121 Cases, The Journal, Oct. 3, 1942, p. 343.

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PERIARTERITIS AND MIGRATING THROMBOPHLEBITIS

To the Editor:—1. Why are the veins not involved in diffuse vascular disease such as periarteritis nodosa? 2. What are the etiologic factors behind recurrent migrating superficial thrombophlebitis involving at various times the upper and the lower extremities and axillas, thromboangiitis obliterans, fungous infection and trauma being ruled out.

Roy J. Popkin, M.D., Los Angeles.

Answer.—1. The etiology of periarteritis is unknown. Rich reported that the arterial lesions of periarteritis nodosa may be dependent on increased sensitivity of tissue to foreign substances. He reported a series of cases of serum sickness and reactions to sulfathiazole in which the lesions of periarteritis nodosa were found. Rich and Gregory sensitized animals to horse serum and a few days later injected horse serum; widespread lesions of periarteritis nodosa developed. They concluded that "periarteritis nodosa is a manifestation of anaphylactic hypersensitivity, and widely different sensitizing antigens can be responsible for the development of vascular lesions in patients." Veins are injured rarely in periarteritis nodosa, but this may occur. There is no explanation for this situation.

2. Migratory superficial thrombophlebitis may be a manifestation of thromboangiitis obliterans or of cancer chiefly of the lung, pancreas and stomach and may occur in polycythemia. Occasionally rather minor degrees of trauma may cause venous thrombosis. The role of fungous infections is uncertain. In some instances careful study indicates an increased tendency of the blood to coagulate. Thromboplebitis of course occurs commonly in varices. In many instances recurrent phlebitis is not secondary to any detectable cause but is a disease in itself known as idiopathic recurrent thrombophlebitis.

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CHEMOPROPHYLAXIS FOR TONSILLECTOMIES AND EXTRACTIONS

To the Editor:—A discussion has been developing in local medical circles as to the value of the use of penicillin during tonsillectomy in cases of rheumatic polyarthritis and endocarditis as a preventive measure against new exacerbations of the quiescent disease. My own experience is still scanty and I still miss the extensive American and British literature about the different aspects and possibilities of penicillin therapy.

F. Dobihal, M.D., Prague, Czechoslovakia.

Answer.—It is generally agreed that chemoprophylaxis is indicated for any person who has had rheumatic fever, particularly for one who has a residual endocardial lesion and who is to have oral surgery such as a tonsillectomy or extraction of teeth. A transient bacteremia following such procedures might well precipitate an attack of rheumatic fever or result in the establishment of bacterial endocarditis. The sulfonamides have been employed for this purpose as well as penicillin. Up until recently the limited supplies of penicillin have been devoted to the treatment of established infections rather than for prophylactic purposes, although penicillin was utilized prophylactically in the management of war wounds. It is suggested that one to two hours prior to tonsillectomy 300,000 units of penicillin in a beeswax-peanut oil preparation should be injected intramuscularly. This amount may then be given every twenty-four hours after tonsillectomy for one or two days. These amounts should provide adequate levels in the serum. The sodium salt of penicillin may be dissolved in sterile saline solution and given intramuscularly at more frequent intervals, if desired.

GROWTH AND DEVELOPMENT OF INFANTS

To the Editor:—Could you kindly give me references on the long term follow-up on growth and development of three groups of infants, those who (a) exhibit neonatal erythroblastosis, (b) suffer severe neonatal cyanosis, (c) are premature.

Elizabeth Kirk Rose, M.D., Philadelphia.

Answer.—(*a*) References as to long term growth and development of infants who exhibit neonatal erythroblastosis are: Zimmerman, H. M., and Yannet, Herman: Kernikterus, *Am. J. Dis. Child.* **45:**740 (April) 1933. This report deals only with one phase of the residua of this condition. Recently published is a book (Rh: Its Relation to Congenital Hemolytic Disease and to Intragroup Transfusion Reaction, by Edith L. Potter, Chicago, Year Book Publishing Company, 1947) which contains some follow-up information on this condition.

(*b*) In infants who suffer neonatal cyanosis the question is difficult because cyanosis is but a symptom in various conditions and diseases. In the older literature "asphyxia livida" was the term used to denote cyanosis at birth and was divided into intrauterine and extrauterine causes. Norman W. Clein (Premature Infants, *Am. J. Dis. Child.* **37:**751 [April] 1929) studied cyanosis in premature infants in the early neonatal period. Among the causes of newborn cyanosis one might mention congenital heart disease, atelectasis of the newborn, intracranial hemorrhage, aspiration pneumonia and a variety of other conditions which might have to do with the failure of circulation or blocking of air passages. References on follow-up of infants exhibiting neonatal cyanosis would therefore depend on the exciting cause.

(*c*) One of the best references on follow-up on growth and development of premature infants can be found in The Physical and Mental Growth of Prematurely Born Children, by Julius H. Hess, George J. Mohr and Phyllis F. Bartelme, University of Chicago Press, 1934.

GILT USED IN PRINTING TRADES

To the Editor:—What pulmonary and systemic symptoms and pathologic change might be expected in those who work in an environment in which the air is continually saturated with particles of gilt used on the labels of alcoholic beverages?

M.D., Maryland.

Answer.—Gilt powders as used in printing ordinarily contain finely divided particles of brass or bronze, hammered out from small ingots of such metals. Some brasses and bronzes contain appreciable quantities of lead by design or as an impurity. As a rule, brass or bronze later pulverized is essentially lead free. Lead poisoning from this source is an unlikely hazard. Otherwise this dust in the atmosphere is to be regarded merely as a nuisance and high atmospheric contamination is well tolerated. Nothing analogous to silicosis will develop, although after prolonged, extensive exposure a mild condition discernible in the chest x-ray film may appear to which the term "benign pneumonoconiosis" is applicable. Likewise gross exposure may lead to minor irritation along the respiratory tract on a mechanical basis. In this type of printing operation the area to be covered by gilt may first be printed with glue. The constituents of this glue are not constant. It is possible that sensitization to the glue rather than to the gilt may arise, so that asthma or other indication of an allergic state may be in evidence. Such a state has arisen from gum arabic as applied in printing operations. The upper limit of tolerance for nuisance dusts approximates 50 million particles per cubic foot of air. Any excess over this level should be controlled by appropriate exhaust systems.

HIRSUTISM

To the Editor:—I have heard indirectly that areas of hirsutism can be successfully treated by the local application of an ointment containing, I think, testosterone propionate. Kindly discuss the local application of hormone preparations to areas of hirsutism. Please give references in the literature.

M.D., Colorado.

Answer.—Any patient with hirsutism should have endocrinologic studies to rule out organic pathologic conditions such as Cushing's disease, arrhenoblastomas and the adrenogenital syndrome. If negative, the generally preferred method of permanent removal of superfluous hairs is by electrolysis. It has been reported in the literature that as little as 450 mg. of testosterone propionate has produced hirsutism.

HEXAETHYL TETRAPHOSPHATE

To the Editor:—Concerning the question in Queries and Minor Notes for June 21, 1947 regarding the toxic effects to be expected in man from the insecticide hexaethyl tetraphosphate: It should be emphasized that if the oral toxicity figures in animals are transferable to man, as little as 0.35 cc. (about 5 drops) may be fatal if ingested. Hexaethyl tetraphosphate is a very potent anticholinesterase agent (such as physostigmine, neostigmine and di-isopropylfluorophosphate) and this fact allows certain toxic effects in man to be anticipated although severe poisoning has not been reported. Miosis, feeling of constriction in the chest, increased gastrointestinal and salivary activity, headache and skeletal muscle twitching may be expected. A conspicuous symptom of severe poisoning in certain experimental animals, as observed in this laboratory, is dyspnea with extreme cyanosis (bronchospasm?) controllable by atropine when given prophylactically or early in the course of poisoning. Though the studies are incomplete, it appears that the use of atropine and other parasympathetic depressants and sympathomimetic and other bronchodilator drugs in suitable doses and at proper intervals should provide the rational basis for the drug therapy of acute hexaethyl tetraphosphate poisoning. Artificial respiration should be promptly instituted if such drug therapy fails.

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THE CHALLENGE OF FUNCTIONAL DISEASE

Chairman's Address

JOSEPH T. WEARN, M.D.
Cleveland

More than one half of all the hospital beds in this country are occupied by patients who are mentally ill; more than one fourth of the annual operating budget of New York state is now devoted to caring for the mentally ill; of some 15,000,000 men examined by Selective Service, 1,875,000 were rejected on the ground of neuropsychiatric disorders. This represents 37 per cent of the men rejected for all causes; and even after this initial screening, 39 per cent of all medical discharges from the army between January 1942 and December 1945 were classified as psychoneuroses.[1] At least 5 of every 10 patients who consult physicians today prove through examination to have no organic basis for their complaints. A small, highly specialized group of psychiatrists, working independently, have attempted to cope with this problem, but this group is so small and the problem is so great that it is physically impossible for them to carry more than a fraction of the load. Therefore, unless all practitioners assume the responsibility the greater part of this work will not be done.

In view of the exceedingly serious import of these facts, each individual physician must ask himself if there is any responsibility on him and, if so, how adequately is he prepared to meet this problem? The practitioner, whether he desires to or not, certainly must shoulder the responsibility for the simple reason that, be he pediatrician, internist, surgeon or general practitioner, he is the first to see these patients and may see them when the emotional disturbances are in the incipient stage. The pediatrician, for instance, who follows the child from infancy to adolescence, is in a peculiarly strategic position to recognize the earliest disturbances and to take steps to correct them through skilled and intelligent guidance of the parents. This is of great potential importance, for it is generally believed that the bases for psychoneuroses that develop later are formed in infancy and childhood. Probably there is no place where more effective preventive work can be done than in early childhood. The importance of recognizing, evaluating and properly treating the emotional disturbances in young children or, still better, of creating an environment in which such disturbances are prevented cannot be overemphasized, for the way in which these factors are handled will "make" for harmony or disharmony in the development of the human personality."[2] It follows that the general practitioner, who in many communities serves not only as the pediatrician but also as the principal adviser on family problems, has the same great opportunity and responsibility.

Later in the patient's life it becomes the responsibility of the internist and family physician to recognize the manifestations of emotional disturbances and to evaluate emotional as well as physical symptoms. The surgeons too, including orthopedists and gynecologists, have a duty to recognize functional disease in patients seeking surgical care and to take note of the emotional disturbances evoked by their procedures. There can be no doubt that many a woman with a functional backache has endured an orthopedic brace or been subjected to a hysterectomy and still ends up with the backache unrelieved. In short, it is only too evident that all physicians have a continuing and very real responsibility for the identification and correct management of patients with functional disorders.

If this is true it must then be asked how well qualified is the average physician to undertake this work and what has been his training for it? A partial answer to this question may be found by glancing at the curriculums of the medical schools and teaching clinics of this country during the past fifty years. It is generally known that medical schools have concentrated on the many problems of organic disease. The reasons for this seem obvious. In the first place, it is the organic diseases that kill; the great epidemics have taken a toll of millions through the years. One need only mention some of those that have occurred during the last half century, such as typhoid, typhus, smallpox, malaria and influenza. Other diseases, including the cardiovascular group, malignant growths and malnutrition, have been equally deadly. It was inevitable, therefore, that the energies of physicians both in research and in practice were mobilized to solve the problems presented by these lethal diseases. These same men as teachers in the medical schools focused their attention on training students in the cause and treatment of organic disease. The researches carried on through these years also naturally followed this same trend and were amazingly productive and brilliant—many of the infectious diseases having been largely eliminated. With the aid of new biochemical, physiologic and immunologic techniques enormous strides have been made in the diagnosis, prevention and treatment of these organic diseases, and the pace has not been slackened.

This emphasis on organic disease still persists today in medical schools for the reasons mentioned and also, perhaps, because it is much easier to give a lecture to third year students on factors which cause disintegration of bacteria than on those which cause disintegration of

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Read before the Section on Internal Medicine at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

[1] Menninger, W. C.: Am. J. Psychiat. 103: 577, 1947.

[2] Putnam, M. C.: Second Annual Report, The Children's Center, Roxbury, Mass.

personalities. Until comparatively recent years little formal training was offered to the student in the diagnosis and treatment of functional disease. It is not surprising, therefore, that the average practitioner, through no fault of his own, has not had adequate training in the care of functional disease and is aware of a lack of proper qualification to deal with it. There are exceptional practitioners, versed in the art of medicine, who have had unusual success in this field, but many others fail to recognize it or refuse to admit its existence. When they find no evidence of pathologic or structural lesions to account for a patient's complaints, they are too ready to tell him that there is nothing wrong because all tests are normal and to advise him to take a vacation and forget his troubles. There are exceedingly few physicians, including those in the specialties other than psychiatry, who are really familiar with the tenets, technics and therapeutic methods of modern psychiatry.

The brilliant achievements of medical science in the field of organic disease during the past fifty years have blinded many physicians to the fact that the psychiatrists, too, have made significant advances both in the understanding of the mechanisms of the human emotions and in the evolution of new technics and methods of treatment. At the beginning of this century, Kraepelin published his descriptions and classifications of the various syndromes of mental disease, and hospitals for the care and study of advanced psychoses began to appear. It was the first World War, however, that created the increased demand for psychotherapy. Further advances were made both in Europe and in America, notably in the clinics of Salman, Southard and Meyer in this country. During these years Freud was conducting his epochal studies of the factors governing the unconscious workings of the mind, which subsequently led to psychoanalysis as a technic for the relief of psychic distress. This is not the place to go into the details of his many original theories and technics, but his orderly method of eliciting and evaluating significant data from the emotional life of a patient points a value for the practitioner of medicine which he cannot afford to ignore.

Even at the beginning of the second World War the magnitude of the psychiatric problem was grossly misjudged, for although an attempt was made to have every man entering the armed forces screened by a psychiatrist, the time allotted for this was absurdly inadequate and the number of skilled psychiatrists extremely small. Further evidence of miscalculation was the fact that the table of organization for a thousand bed general hospital called for but one psychiatrist. On reaching the field these hospitals were swamped with neuropsychiatric patients and were forced to draft a considerable proportion of their internists for the psychiatric services. As the war progressed, the deficiency of facilities for the care of these patients became more and more apparent, as did the realization that the number of available psychiatrists was wofully inadequate. In the face of their overwhelming burden the psychiatrists in the field performed magnificently and developed new and more successful methods of treatment. During the war many medical men in the services recognized the need for the effective handling of emotional problems and saw for the first time some of the results of psychiatric technics and treatment.

Why then, in the light of these obvious needs, these achievements by psychiatry and these wartime opportunities for practitioners to see the effects of emotions on body functions, has there not been a closer integration of psychiatry with the rest of medical practice? For one thing, there can be little doubt that there still persists a certain amount of mutual hostility and suspicion between the two groups. Many practitioners tend to believe that the psychiatrist either overlooks entirely or minimizes unduly the somatic origin and significance of structural lesions. For example, physicians are not favorably impressed by psychiatrists' claims that asthma, arthritis, peptic ulcer and even tuberculosis may be of emotional origin. Some physicians believe that if psychiatrists were better grounded in organic medicine many of their claims would be less sweeping and, therefore, more susceptible of scientific proof. The psychiatrist, on the other hand, believes that the practitioner fails to look at the human being as a whole, disregards the actions and reactions of the patient and concentrates on clinical procedures and laboratory measurements while treating disease as an accidental pathologic invasion unrelated to the particular character of the host. In short, the psychiatrist seems to believe that the medical practitioner is engaged in a relatively unimportant series of quantitative analyses, while wholly missing the deeper, or psychiatric, significance of most disease. Again, the physician finds many of the hypotheses and postulates of the psychiatrists fantastic and in some instances actually absurd. Also, experienced practitioners rather resent the claims of some psychiatrists that psychiatrists alone are qualified to teach the art of medicine, despite their limited knowledge of the general field of medicine and their lack of experience in it.

The psychiatrist loudly proclaims that his hypotheses are highly scientific, that they are based on a body of scientific data and that psychoanalysis is a standardized scientific discipline. The medical scientist trained in the disciplines of biochemistry and biophysics fails to find precise measurements in this body of data. This has been admirably expressed by Gregg[3] in his Critique of Psychiatry: "For example, a valuable addition to the ranks of psychiatry would be some recruits whose training and formation of mind in the more exact sciences would operate in the direction of insisting on more precision, a search for measurable phenomena, more emphasis upon phenomenon and less upon noumenon, and more discrimination in the examination of evidence."

Again, some psychiatrists seem satisfied with the long term method of treatment which considers the whole life of the patient as in psychoanalysis, whereas the medical practitioner is in constant search for the swiftest means of restoring health. The present trials of penicillin instead of the older methods of treatment for gonorrhea, syphilis and pneumonia are examples. Without any thought of passing judgment on the thoroughness and effectiveness of the long term methods now employed by some psychiatrists, the fact remains that the brevity of any method has an important bearing on the number of patients who can or will receive the needed benefit which the method of treatment may offer. The very magnitude of the problem of functional disease, involving as it does millions of patients, demands methods of diagnosis and treatment which are practical and readily available to all patients.

Much of this suspicion and hostility and many of the divergent views are probably due to the extreme isolation in which psychiatry has existed and developed since its origin. Cloistered as a rule in remote hospitals, psychiatrists seem to have been content to indulge in their own inconclusive factional controversies and to have shown little interest in communicating their knowledge to the other members of the medical profession and even less enthusiasm for keeping abreast of research and developments in fields other than their own.

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[3] Gregg, A.: Am. J. Psychiat. **101**: 285, 1944.

Another serious barrier which has served to estrange the two groups even further, is the language difficulty. Perhaps in part as a result of their isolation, psychiatrists have developed a vocabulary of their own. Many of the words are not to be found in standard medical dictionaries. Or, if they do appear in any of these, the newer meanings or connotations assigned to them by psychiatrists may not even be mentioned. In addition to the obscurity of meaning, many of the terms selected by the analysts seem to other members of the medical profession ill chosen and unfortunate. Thus a specialty whose major medium is speech is further isolated from the other branches of the medical profession by the use of a vocabulary which is too frequently not understood by the uninitiated.

These examples of divergence in points of view, though by no means completely covering the field, are sufficient to show that it is high time that steps be taken to bridge this gulf, to bring to an end the isolation of psychiatry as a specialty and to integrate it thoroughly in all fields of medicine. There can be no question of the great advantage to the general practitioner and to his patients in having a sufficient knowledge of psychiatric technics and procedures to enable him to meet the problem of functional disease more adequately. To those physicians who have recognized this problem and attempted to cope with it in an intuitive fashion, psychiatry offers systematic and orderly technics for the understanding and handling of the emotional problems of the patient; and surely the introduction of an orderly and tested system is far better than the reliance on hit or miss methods. For those physicians who have ignored or denied the existence of functional disease and the effect of instinctual drives and emotional conflicts on the life of a patient, a knowledge of psychiatry will reveal an unknown field which they can no longer afford to neglect. The physician adequately trained in organic and functional disease should be able to recognize with little delay the primary underlying etiologic factors and, in the case of patients with functional disease, spare them the repetition of innumerable costly tests to which such patients are so frequently subjected. If he is to achieve this necessary knowledge and understanding of what psychiatric practice has to offer, the physician will require not only an open mind but also a far more receptive and generous attitude and a willingness to study the subject.

The psychiatrist, too, stands to reap real gains and a better balance through a more intimate knowledge of the researches and clinical developments in the other fields of medicine and should realize that in order to evaluate the whole patient it is equally essential that one have adequate knowledge of the soma as well as the psyche. Thus would emerge a growing mutual humility, respect and knowledge which, after all, are the cornerstones of integration.

Undoubtedly the most effective and logical place to attack this problem is in the medical schools. Only a few years ago the course in psychiatry consisted of a brief survey of the major psychoses. Recently, however, there have been significant advances in the teaching of psychiatry as a fundamental aspect of the basic general training. Instead of being taught only as a specialty, psychiatry should be elevated to a major position in the general medical curriculum and actively integrated with the clinical teaching in all departments of the school. The psychiatrists themselves are agitating to have psychiatry given a position in the medical curriculum as a basic science. But until psychiatry can move out of its world of controversy, theory and metaphysics and can establish a collection of more consistent, precise and proven data and phenomena, the other divisions of the medical profession are not likely to accept it as a basic science. It is my personal opinion that the future of medical education lies in a breakdown of preclinical and clinical barriers and in a much closer integration of all teaching and research activities rather than the setting up of new isolated departments. In the School of Medicine of Western Reserve University the preclinical foundations of psychiatry are being given in the first two years. In the third and fourth years instruction in psychiatry is closely integrated with work in other departments, particularly the Department of Medicine, in which the teaching is carried on jointly in order to give proper balance and coordination to the physical and the functional aspects. Additional training and correlation are being carried on into the medical internships and residencies in Lakeside Hospital, where each intern now spends four months in psychiatry early in the course of his internship.

A far more difficult problem is to bring to those physicians already in practice an opportunity to acquire some knowledge of recent psychiatric advances in the field of functional disorders. One obstacle is the lack of postgraduate courses in this subject and the inadequate number of psychiatrists able to teach in a manner convincing to experienced clinicians. Recently, an interesting and most worth while experiment in the postgraduate teaching of psychiatry was made in Minneapolis under the auspices of the Commonwealth Fund and the Division of Postgraduate Education of the University of Minnesota, with the purpose of finding out whether practicing physicians in a short postgraduate course could learn the gist of what psychiatry has to offer in the care of psychoneurotic patients. With eight young psychiatrists and an internist as teachers and twenty-five practicing physicians from Minnesota and nearby states as students, a two week course of lectures, conferences, clinics and interviews with patients was given. The patients were taken more or less as they came, mostly with chronic complaints such as every physician sees in his practice. The proof of the success of this original experiment is to be found in the comments of the physicians who were the students. Almost all of them considered that they had gained immeasurably in their insight into the physician-patient relationship, in their ability to view the patient as a whole rather than as the carrier of an isolated diseased organ or system and in the comprehension of a tried systematic method for dealing with functional disease.[4] A recent follow-up was made by the Commonwealth Fund by visiting the physicians who attended the course as students. The testimony was almost unanimous that the two weeks' training had proved an invaluable help in their practice.

While such a course may not be available to every physician at the moment, a strong demand to one's county, state and national medical societies for similar opportunities for instruction will, in due time, bring results. Similarly a demand for such postgraduate courses in the medical schools will eventually be met.

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[4] Smith, G.: Psychotherapy in General Medicine, New York, Commonwealth Fund, 1946.

In the meantime some insight and knowledge of the problem may be gained by a study of the literature now available in this field. However, there seems to be a real need for textbooks giving a clearer presentation by psychiatrists of their concepts of the mechanisms of the emotions, as well as the simpler technics of treatment and the results of therapy.

In summary, the practitioner in all fields of medicine is confronted today with a major challenge, which is the recognition and proper handling of patients with functional disease. It is a challenge that he can and must meet, but in order to do so he must equip himself with additional knowledge of some of the precepts and technics of psychiatric practice. Even though new knowledge and technics in this field are acquired by practitioners in all departments of medicine, the challenge still stands, for the members of the profession must apply to this urgent problem of functional disease all the investigative and research skills which in the past fifty years have produced such epochal advances in the knowledge of organic disease. Only by a concentrated effort of medical schools, general practitioners, psychiatrists and specialists in the preclinical sciences can the members of the medical profession successfully cope with the problems created by functional disorders which will soon be, if they are not already, the greatest single cause of the symptoms which bring patients to a physician's office.

PSYCHOSOMATICS

The Liaison Between Internal Medicine and Psychiatry

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In the time at my disposal, in a field in which one book alone is fortified by 2,251 references to the literature, I can scarcely hope to do more than sketch a few basic ideas

Psychiatrists have not yet recovered from their surprise at the medical sensation produced by the introduction of the word psychosomatics into the language of medicine. They approve highly the provocative thinking induced by the word but are somewhat amazed that so frequently it is regarded as designating an original contribution. Psychosomatic medicine was announced at least two thousand five hundred years ago, when the wise Socrates on returning from the second Thracian campaign chided the Athenian physicians for not realizing, as did the Thracians, that the body would not be cured without the mind. "This," he said, "is the reason why the cure of many diseases is unknown to the physicians of Hellas, because they are ignorant of the whole."

Furthermore, no doubt stimulated by the dearth of instruments of precision, such as the electrocardiograph and being able to obtain at best a somewhat misty view of the central nervous system, psychiatrists long since began to view patients in their totalities as unified functioning organisms. At least a decade before the word psychosomatic was coined, psychiatry had insistently taught that man was a total and indivisible unit and therefore, in health and disease, every somatic process at once reverberated in all of the man and notably in his emotions; conversely, that every emotional reaction, whether violent and pathologic, like rage, or merely a feeling tone, perhaps a mild state of dissatisfaction or slight irritability, immediately had repercussions in every tissue and cell of the body. Not infrequently psychiatrists observe in some of the major psychoses and sometimes in hysteria patients who are cataleptic, that is, their limbs may be placed in awkward, strained positions which often are retained beyond the time limits of physiologic endurance, or patients in stupor, who are quite irresponsive to painful stimuli. Naturally, in view of these clinical phenomena, psychiatrists can accept readily enough the fact that headache, backache, nausea, vomiting, tachycardia and a host of other common symptoms often may represent the somatic expression of unresolved, unconscious emotional conflicts.

Finally, it is truly amazing that physicians for such a long time failed to understand the medical significance of the time immemorial experiences of our species, so common that they have become a part of every day language. From primitive man to Homo sapiens, human beings have been trying to explain to their medicine men, and later their physicians, that under stress of emotion they felt lumps in their throats, that their hearts jumped or stopped, that their stomachs dropped, that they had no guts or too much guts, that they were paralyzed with fear or blinded with rage, that they viewed the world with jaundiced eyes and so on. And yet physicians waited until this time to think scientifically in terms of psychosomatics.

Perhaps this is a suitable time to resurvey the progress that has been made in the application of the lessons of psychosomatics to the everyday practice of medicine and its specialties. While there are many exceptions, my experience leads me to believe that there is still far too wide a gap between the use of the word psychosomatic (and sometimes its glib use) and the deep understanding of what it really means and its therapeutic implications.

The sins of omission may be listed under three categories:

1. The continued overuse of various pharmacologic and physical therapeutic measures and the insufficient employment of psychotherapy. There is no reason why patients should not be given medicines or stomach lavage, gallbladder drainages, nose and throat treatments, massage, prostatic massage, hydrotherapy, heliotherapy, special corsets or what not; but if the illness is largely functional, the result of unsolved emotional conflict, then unless the patient clearly understands that these treatments and technics at best are adjunctive, merely supportive and ameliorative, and that the chief reliance must be on psychotherapy, there is grave danger that the symptoms will become irreversibly fixed—that catastrophe of hopeless chronicity. Like the bedeviled man in Scripture, the last state of that patient will be worse than the first.

In a recent article a well known ophthalmologist[1] concluded that "the precision of diagnostic and therapeutic procedure available to ophthalmology has led to a conspicuous neglect of psychic factors in ocular disease. That prolonged but reversible physiologic disturbance can eventually give rise to irreversible organic disease is no less true in the eye than in other body systems."

2. A definite tendency, which I still find to distinguish organic from functional by the fallacious criterion that in organic disease the symptoms are

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Read in the General Scientific Meetings at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1947.

[1] Harrington, David O.: Psychosomatic Disorders, J. A. M. A. 133: 669 (March 8) 1947.

objective, in functional illness subjective. Surely physicians should have learned at long last that such objective symptoms as tachycardia, vomiting, dermatitis, the many chemically demonstrable preliminary phenomena eventuating in anxiety-conditioned peptic ulcer and many other symptoms are often both objective and functional.

3. Too little understanding, which I believe still exists, of even a simplified framework of psychopathology. This should be built of living clinical facts, not armchair philosophic abstractions; and it must be accepted and understood that psychopathology is as real and as symptom-determining as is cirrhosis of the liver or valvular disease of the heart. Any one who wishes to practice psychosomatic medicine must have a workable concept of the structure of the human personality and the not conscious mind—a mind containing significant repressed material not accessible to everyday conscious awareness; of the hidden conflict between irreconcilable demands of the personality and of the many technics and mechanisms of defense which operate to produce the pathologic compromise, often presenting to the physician as functional psychosomatic illness. It must be realized that these psychopathologic disease evolving steps are as concrete as are the stages, let us say, between the chancre of syphilis and syphilitic aortitis. Furthermore, it must be realized that there is no universality of psychopathology. Neither is there in organic pathology. For instance, given infection by the bacillus of Koch, the particular bodily constitution becomes a factor in shaping the varying result—tuberculosis, acute or chronic, which may involve any organ or tissue of the body. So too are the particular markings of the personality influential in molding psychosomatic symptoms and helping to fix their location —cardiocirculatory, gastrointestinal, genitourinary or dermagenic. Each human personality, striving unconsciously to avert the catastrophe of psychic disorganization, utilizes the psychologic weapons which are the more natural and trustworthy for that particular personality.

Such an inference might be drawn by observing animal behavior when confronted with a threat to physical survival. Huge animals, such as elephants, charge the danger and attempt to demolish it by their poundage. Large cats, such as the tiger, add feline cunning to their muscular strength and agility and the tearing power of fang and claw. The opossum plays dead. Myriads of insects escape destruction by inconspicuousness—utilizing their natural camouflage to merge into the trunk of a tree or a blade of grass.

Psychiatrists regret that the word psychosomatic does not convey any intimation at all of the enormous influence of the environment not only in motivating psychosomatic illness but even in fixing the locus of the symptoms. It is a commonplace of practice to observe the significant role played in the determination of the site and pattern of psychosomatic symptoms in adults by the early emotional impact of organic disease in a parent in the highly personal framework of the childhood environment. And every physician knows how functional psychosomatic illness frequently is delineated and its location largely determined by the nature and conditions of the occupational and industrial environments.

Psychiatry has been the somewhat lonely and not always effectual torch bearer of the significance of the effect of personal, social and vocational environments in human functional disease. The psychiatrist needs help from internal medicine. As a beginning and in order to stimulate teaching, I propose the word psycho-enviro-somatic.

The real beginning of psychosomatics must be made in the preclinical years of medical education. Medicine not only has its physics or somatics but also its "psychics" or psychogenetics. There could be a true and helpful teaching parallel. In anatomy there are livers, hearts and spleens. So too is there an anatomy of psychology to be studied, consisting of normal emotions, consciousness, memory and the like. There is a physiology which teaches how organs work. So too should there be taught a physiology of how mental functions work. Paralleling histology, the microscopic study of normal organs and tissues, the student should be made familiar with the finer divisions of mental functioning; for instance, remote and recent memory, the gradations of normal consciousness, the variety of emotional shadings and their somatic profiles. When the Department of Pathology is demonstrating gross morbid lesions, syphilitic aortitis, liver abscess and what not, the Department of Psychiatry should be demonstrating the gross pathology of the mind, pronounced emotional deviations such as profound melancholia or rage and fear with their component bodily expressions. Likewise should there be dual teaching of microscopic pathology, on the one hand, let us say, the study of a cross section of an arteriosclerotic vessel or the walls of an abscess, on the other a span of amnesia or the psychosomatics of anxiety due to repressed emotional conflicts.

If the loaf of medical practice is to be thoroughly leavened, the medical student must be given from the very first week in medical school the opportunity of studying all of man and not only a hypothetical somatic half.

111 North Forty-Ninth Street.

CARBOHYDRATE METABOLISM IN OSTEITIS DEFORMANS, OR PAGET'S DISEASE

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In the following report of 2 cases of osteitis deformans, or Paget's disease, we wish to reemphasize the close relationship between calcium and carbohydrate metabolism that has been observed clinically by us in cases involving an osteolytic or osteogenic process such as is seen in osteoporosis and Paget's disease.[1] It is our purpose to show that carbohydrate metabolism is disturbed in osteitis deformans. First, we shall report 2 illustrative cases in which there was a pronounced familial incidence of diabetes mellitus. Second, we shall cite evidence of a high familial incidence of diabetes in 42 other cases of the disease; in addition there was a high incidence of obesity and tallness in the families of these. Third, we shall prove that there is a lowered dextrose tolerance in Paget's disease.

From the Department of Internal Medicine, Harper Hospital

[1] (a) Moehlig, R C, and Abbott, H L Carbohydrate Metabolism in Osteoporosis and Paget's Disease, J Michigan M. Soc **45:** 642 646 (May) 1946 (b) Moehlig, R C Paget's Disease and (Osteitis Deformans) Osteoporosis, Surg, Gynec & Obst **62:** 815 822 (May) 1936; Osteoporosis Due to Carbohydrate and Calcium Metabolism Disturbances, J. Michigan M Soc, **37:** 509 515 (June) 1938 Moehlig, R. C, and Adler, S · Carbohydrate Metabolism Disturbance in Osteoporosis and Paget's Disease, Surg, Gynec & Obst **64:** 747 757 (April) 1937.

REPORT OF CASES

As illustrative of an almost certain biologic, inherited carbohydrate disturbance which resulted in Paget's disease, we submit the following case histories, which illustrate this inherent tendency.

Case 1.—*History.*—B. W., a white man aged 58, weight 160 pounds (72.7 Kg.) and height 66 inches (167.6 cm.), was first seen by us on Oct. 10, 1946. His main complaints were of the gradual onset eight years ago of deafness, occasional attacks of dizziness, low back pain, a noticeable increase in his head size and a gradual decrease in stature, associated with anterior and lateral bowing of his legs. He had been extremely fond of sweets and candy for the past fifteen years. His past history was essentially noncontributory.

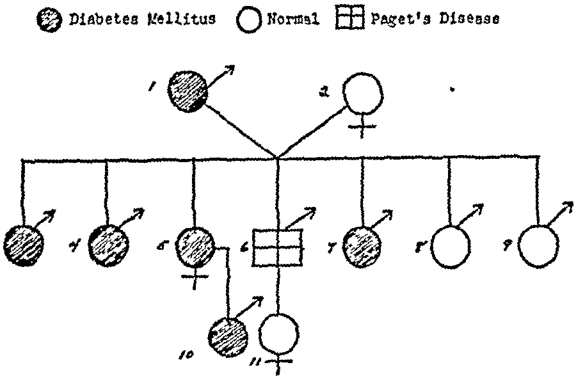

Fig. 1 (case 1).—Inherent tendency to disturbance in carbohydrate metabolism: complete data are given in the family history on 1, father; 2, mother; 3 and 4, brothers; 5, sister (these five are dead); 6, patient; 7, 8 and 9, brothers; 10, nephew, and 11, daughter of the patient.

Family History.—The father of the patient was 72 inches (182.8 cm.) tall, weighed 225 pounds (102.7 Kg.) and died at the age of 72 of advanced arteriosclerotic cardiovascular disease associated with diabetes mellitus. The mother of the patient was 66 inches (167.6 cm.) tall, weighed 150 pounds (68.2 Kg.) and died at the age of 77 of cardiac disease of unknown type. The patient had one brother who was 66 inches (167.6 cm.) tall, weighed 230 pounds (104.5 Kg.) and died at the age of 52 of diabetes mellitus. Another brother was 67 inches (170 cm.) tall, weighed 175 pounds (79.5 Kg.) and died at the age of 19 of diabetes mellitus. One sister was 70 inches (177.8 cm.) tall, weighed 160 pounds (72.7 Kg.) and died at the age of 40 of diabetes mellitus; her only living son, now aged 23, has an extremely severe type of diabetes mellitus. The patient has three living brothers; one is 60 years of age, 68 inches (172.7 cm.) tall, weighs 225 pounds (102.7 Kg.) and is apparently healthy; another brother, aged 54, height 69 inches (175 cm.) and weighs 210 pounds (95.4 Kg.), has renal calculi; another brother who is 48 years of age, 69 inches (175.2 cm.) tall and weighs 230 pounds (104.5 Kg.) has diabetes mellitus. The daughter, and only child, of the patient is now 32 years of age and apparently healthy, but during her teens she had amenorrhea associated with a goiter and was given calcium by her physician (fig. 1).

Physical Examination.—The patient was a well nourished, elderly man, who exhibited a large head, decided dorsal kyphosis and bowing of the legs anteriorly and laterally. Other than this and a palpable adenoma in the left lobe of the thyroid gland, the examination revealed essentially normal conditions.

Laboratory Data.—The urine was clear and gave normal results to routine laboratory analysis. Examination of the blood revealed: hemoglobin 14.7 Gm. by the Sahli method; erythrocytes 5.1 million; leukocytes 10,900, with a normal differential count. The blood chemical studies revealed a negative reaction to the Kahn test; the fasting blood sugar was 104 mg., nonprotein nitrogen 39 mg., serum cholesterol 303 mg., calcium 10 mg., and phosphorus 3.1 mg., per hundred cubic centimeters; the acid phosphatase was 4.5 units and alkaline phosphatase 117.9 units (modified King and Armstrong method). The electrocardiographic curve was normal. The dextrose tolerance curve (the alimentary standard one dose test) showed values in the blood as follows: fasting 104 mg., after one-half hour 186 mg., after one and one-half hours 189 mg. and after two and one-half hours 89 mg., per hundred cubic centimeters. The urinalysis for sugar was negative for each sample.

Roentgen studies of the skull, the right humerus and the pelvis revealed "changes having the appearance of fibrocystic disease such as is seen in Paget's disease."

Case 2.—*History.*—Miss M. M., a white woman aged 40, weight 160 pounds (72.7 Kg.) and height 66 inches (167.6 cm.), was first seen by one of us in March 1923 with the main complaint of pain in the low lumbar area of the back, pain in both thighs and a gradual onset of deafness, which was progressively becoming worse. (She was totally deaf by May 1935.) She also had severe pain in the right renal area; this required the analgesic use of morphine. The past history was essentially noncontributory.

Family History.—The father of the patient was 74 inches (187.9 cm.) in height and weighed 250 pounds (113.6 Kg.); he died at the age of 60 with diabetes mellitus. The patient's mother, whose height and weight are unknown, died at an early age of diabetes mellitus. One brother is living; he is 68 inches (172.7 cm.) tall, weighs 175 pounds (70.5 Kg.) and has diabetes mellitus, gallstones, renal calculi and Paget's disease. One sister is living; her height is 65 inches (165.1 cm.) and her weight 145 pounds (65.9 Kg.). She has Paget's disease and a diabetic dextrose tolerance curve (fig. 2).

Physical Examination.—Essentially normal conditions except for a pronounced dorsal kyphosis were revealed by physical examination.

Laboratory Data.—Laboratory determinations were within essentially normal limits except for a blood alkaline phosphatase level of 63 units (modified King and Armstrong method). The dextrose tolerance curve (the alimentary standard one dose test) showed values in the blood as follows: fasting 140 mg., after one-half hour 246 mg., after one and one-half hours 280 mg. and after two and one-half hours 180 mg., per hundred cubic centimeters; the urinalysis showed a trace of sugar in each of the last two samples.

Roentgen studies of the skull and pelvis revealed changes characteristic of Paget's disease. A right ureteral calculus was also present.

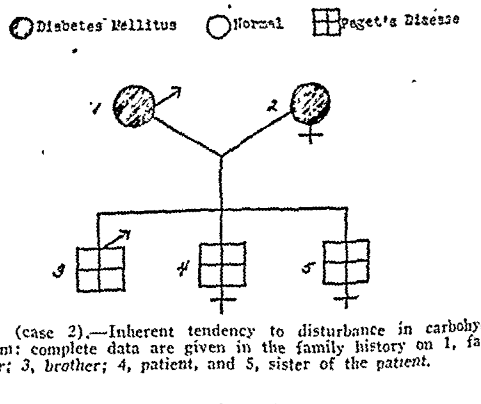

Fig. 2 (case 2).—Inherent tendency to disturbance in carbohydrate metabolism: complete data are given in the family history on 1, father; 2, mother; 3, brother; 4, patient, and 5, sister of the patient.

COMMENT

Today the view is generally held that Paget's disease is not a generalized systemic disease. As Bauer[2] said, "The preponderance of clinical, biologic and pathologic data does not favor its being a generalized systemic disease of either infectious or endocrine origin."

We consider, on the other hand, that the biologic and clinical evidence favors the view that it is a systemic disease. Phosphatase, an enzyme which hydrolyzes phosphoric esters, is decidedly elevated in

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[2] Cecil, R. L.: Textbook of Medicine, ed. 6, Philadelphia, W. B. Saunders Company, 1943, p. 1329.

Paget's disease—more than in any other disease. Since this enzyme is concerned with both carbohydrate metabolism and the development of the osseous system, the history of familial diabetes, obesity and tallness and the important fact that 29 of our series[1a] of 33 patients with Paget's disease had a diabetic dextrose tolerance curve, point unmistakably in the direction of a systemic disease.

In a previous article[1a] we reviewed 40 cases of Paget's disease, in 13 of which we noted a familial history of diabetes mellitus. There were 35 patients who had one or more members in their immediate families who were 71 inches (180 cm.) or more in height. Thirty of the group had one or more members in their immediate families who weighed 200 pounds (90.9 Kg.) or more. Dextrose tolerance tests were made in 31 of the cases: in 27 there was a diabetic type of curve, and in 4 it was normal.

The fact that such a high percentage of our patients with Paget's disease came from obese families is also evidence pointing to a disturbed carbohydrate metabolism, for it is common knowledge that obesity is a predisposing factor in diabetes mellitus.

In the same paper[1a] we reviewed 94 osteoporotic cases. We found similar familial tendencies. No patient in our series of 94 osteoporotic cases presented symptoms of diabetes mellitus, but 33 patients gave a familial history of diabetes mellitus. Eighty-two patients had one or more members in their immediate families who were 71 inches (180 cm.) or more in height. Seventy-four patients had one or more members in their immediate families who weighed 200 pounds (90.9 Kg.) or more. Of those 40 osteoporotic patients on whom we were able to perform a dextrose tolerance test,[3] 35 had diabetic type curves and 5 had a normal or increased tolerance.

It is important to note that those diseases which involve carbohydrate metabolism also produce changes in calcium metabolism. Diabetes mellitus, as is well known, is associated with deposition of calcium in the blood vessels.

Thyrotoxicosis is usually associated with a lowered sugar tolerance, and at times frank diabetes mellitus is present. Frequently thyrotoxicosis produces osteoporosis. A negative calcium balance with a normal serum calcium is present in this condition. Patients with thyrotoxicosis are subject to calculi of the urinary tract. Deposits of calcium in the blood vessels, spleen, uterus and soft tissue structures are not uncommon.

Pituitary basophilism is another disease in which carbohydrate metabolism is accelerated. Here too, osteoporosis is one of the cardinal signs of the condition. The serum calcium is normal however.

Acromegaly, which is associated frequently with frank diabetes mellitus and a lowered carbohydrate tolerance, also has as a cardinal sign osteoporosis. Both pituitary basophilism and acromegaly produce kyphosis as a result of osteoporosis. These clinical conditions have at least two things in common, a disturbance in carbohydrate metabolism and a disturbance in bone structure.

Hyperparathyroidism is another disease associated with a calcium metabolic disturbance and pathologic changes in the bones. The metabolic manifestations of this disease are: hypercalcemia; hypophosphatemia; increased urinary excretion of calcium, and increased serum phosphatase activity.

In regard to hyperparathyroidism and these metabolic changes certain experimental work is of interest and pertinent to the present discussion. Moehlig, Murphy and Reynolds[4] in discussing a phase of the metabolic changes, said:

> Ferrannini[5] found that in normal subjects parathyroid extract lowers the glycemic rate during fasting and increases carbohydrate tolerance. The action of the parathyroid extract on the glycemic curve, when compared with that of epinephrine, is almost like that of insulin. In diabetes the parathyroid extract lowers the glycemic curve and the glycosuria *on fasting*. He says there is no doubt about the insulin-like action of parathyroid extract in normal subjects and in diabetic patients.
>
> Johnson[6] administered calcium gluconate alone and in combination with parathyroid extract to 6 dogs under ether anesthesia, and the blood sugar changes were noted. Following the administration of calcium gluconate and calcium gluconate in combination with parathyroid extract the portal vein blood sugar fell rapidly and continuously during the period of the experiment. The lowest levels were reached under the influence of the combined action of calcium gluconate and parathyroid extract (*both given intravenously*). In the control animals the portal blood sugar showed a consistent rise, as might be expected under the influence of ether anesthesia. From these experiments he concluded that the fall of the blood sugar is due to *impaired absorption* of glucose from the gastrointestinal tract. He pointed out in this paper that the extent of the fall was in relationship to the original level of the blood sugar—the higher the original level, the greater the extent of the fall. He further pointed out that the fall in blood sugar paralleled the rise of blood calcium and that there was *a rather definite inverse relationship.*

Funsten[7] reported disturbances in carbohydrate metabolism in patients with fractures.

Moehlig, Murphy and Reynolds[4] attempted to produce Paget's disease in dogs by the use of anterior pituitary extract and parathyroid extract. Among the effects noted in dogs on a high carbohydrate diet and parathyroid extract, were a rise in blood calcium and a lowering of the blood sugar, phosphorus and phosphatase. These effects were transitory.

All 4 dogs used in the experiment showed a rise in blood calcium when glucose ("karo corn syrup") was added to the diet.

This evidence suggests that there is a close relationship of carbohydrate metabolism to calcium metabolism.

SUMMARY

Two cases of osteitis deformans (Paget's disease) are reported, in which the family history of diabetes mellitus is outstanding.

The father, three brothers and a sister of 1 patient had diabetes mellitus; a niece of the patient also had diabetes.

Both parents of the other patient had diabetes mellitus, and all three siblings had Paget's disease. In addition, one of the siblings had diabetes mellitus and the other two (including the patient) showed a diabetic type of dextrose tolerance curve.

Previous papers have shown the high incidence of familial diabetes, tallness and obesity in both Paget's disease and osteoporosis.

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[3] We used 100 Gm. of dextrose orally on a fasting stomach.

[4] Moehlig, R. C.; Murphy, J. M., and Reynolds, L.: Attempt to Produce Paget's Disease by the Use of Anterior Pituitary Growth Extract and Parathyroid Extract, Am. J. Roentgenol. **34:** 465-474 (Oct.) 1935.

[5] Ferrannini, A.: Parathyroids and Carbohydrate Metabolism: Action of Parathyroid Extract on Glycemic Curve and on Glycosuria in Diabetic Patients, Policlinico (sez. med.) **42:** 366-379 (June) 1935.

[6] Johnson, J. L.: Influence of Calcium Salts and Calcium Salts in Combination with Parathyroid Extract upon Blood Sugar, Am. J. Physiol. **113:** 72-73 (Sept.) 1935.

[7] Funsten, R. V.: The Effect of Fractures on Blood Sugar, J. Bone & Joint Surg. **17:** 769-773 (July) 1935.

Evidence supporting the view that Paget's disease is a systemic disease associated with a disturbance in carbohydrate metabolism has been submitted. Furthermore, those diseases (diabetes mellitus, thyrotoxicosis, pituitary basophilism, and acromegaly) which involve carbohydrate metabolism also produce changes in calcium metabolism with accompanying changes in the bones. There is a relationship between hyperparathyroidism and carbohydrate changes.

We are hopeful that others will perform dextrose tolerance tests on their patients with Paget's disease and also obtain a detailed family history in regard to the occurrence of diabetes, obesity and tallness. We are firmly of the opinion that if this is done the evidence that Paget's disease is a systemic one will be strengthened and will lead to a determination of its true etiologic basis.

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ARTERIOVENOUS FISTULAS

Their Effect on the Circulation

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and
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Patients with arteriovenous fistulas are seen with relative infrequency in civilian practice, and therefore clinical impressions concerning them have been based on a rather limited experience. The establishment of centers for the treatment of vascular injuries in certain Army general hospitals afforded an unprecedented opportunity to study a large number of such patients. The first of these Vascular Surgery Centers was established at Ashford General Hospital in March, 1943. At this hospital over 375 patients with arteriovenous fistulas were observed and treated by operative means. This report summarizes our experience in regard to the effect of this type of lesion on the circulation.

Prior to injury the patients had been healthy young men (there were 2 women) with no evidence of cardiovascular disease. The arteriovenous fistulas, all the result of trauma, were of various sizes and occurred in practically every named blood vessel of the body with the exception of the aorta. Most of the patients were seen within two to four months after injury, although in a few instances the interval was as long as two years.

It is not the purpose of this paper to discuss in detail the pathogenesis and diagnosis of these lesions. Most of them were produced by small wounds due to the fragmentation of high explosive shells, land mines or grenades. As a rule the external wound was small; thus the imbrication of muscle and fascial planes prevented external hemorrhage of a severe degree, and bleeding was usually readily controlled by pressure. The simultaneous injury of a closely associated artery and vein, particularly if enclosed within a fascial sheath, was believed to be the immediate cause of the arteriovenous shunt. However, in a few instances a blow with a blunt instrument apparently produced the communication between the vessels without producing an external wound.

LOCAL CIRCULATORY MANIFESTATIONS OF ARTERIOVENOUS FISTULA

Regardless of the site of the lesion, the local evidences of an arteriovenous fistula are similar. The most common sign is the bruit, or murmur, which can be heard with a stethoscope in the region of the fistula. In contrast to the purely systolic sound of an arterial aneursym, that produced by an arteriovenous fistula is a continuous murmur extending through both systole and diastole. Systolic accentuation of this sound results in its distinctive character. Although in general the larger the fistula the louder the murmur, this is not always true. At times small fistulas may produce loud murmurs. These murmurs, like those arising from the heart, may be transmitted a considerable distance from the site of origin. The chief cause of failure to hear the murmur is simply failure to listen for it.

If the murmur is of sufficient intensity, a thrill may be felt. Again, although somewhat indicative of the size of the fistula, the intensity of the thrill is not a completely reliable evidence of this fact, since it may be modified by the position of the fistula and the structures overlying it. The thrill is less well transmitted than the murmur and is localized to an area near the lesion.

A pulsating mass of variable size may be caused by aneurysmal dilatation of either the involved artery or vein or by a false sac in the region of the fistula. In many instances, however, there are no external evidences of either arterial or venous dilatation. The superficial veins near the fistula or distal to it are dilated and tortuous in most instances (fig. 1). This dilatation disappears soon after the fistula is removed (fig. 2). Although the pressure in these veins is elevated, the systemic venous pressure is normal in the absence of cardiac failure.[1] Blood withdrawn from the veins near the fistula has an abnormally high oxygen

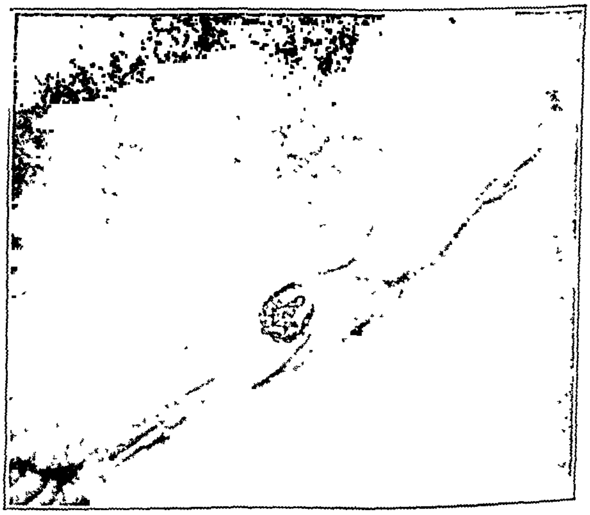

Fig. 1.—Brachial arteriovenous fistula showing dilatation and tortuosity of the superficial veins.

From the Vascular Surgery Center, Ashford General Hospital, White Sulphur Springs, W. Va., and the Departments of Surgery and Medicine, Emory University School of Medicine.

A portion of the work described in this paper was done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the Emory University School of Medicine.

[1] Warren, J. V.; Cooper, F. W., Jr.; Brannon, E. S., and Stead, E. A., Jr.: *Unpublished observations.*

content.[2] In the early stages the area supplied by the artery distal to the fistula may show evidence of deficient circulation. This may vary from mild evidences of circulatory insufficiency such as pallor and coolness of the part to the more severe manifestations such as gangrene or cerebral anemia. Skin temperature and oscillometric measurements confirm these observations (fig. 3). At times there is edema about the fistula or of an extremity distal to the lesion. In the region of the fistula the skin is usually warmer than normal. Oscillometric studies reveal increased pulsations at the site of the fistula, but they diminish gradually as one measures them toward the heart and are decreased distal to the lesion.

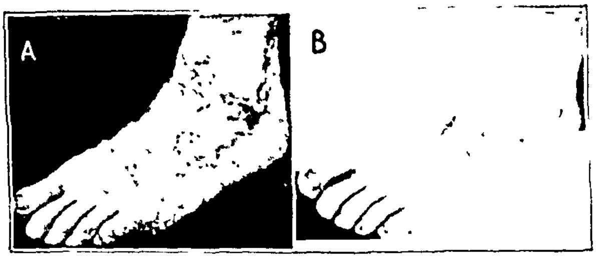

Fig. 2.—A, plantar arteriovenous fistula showing dilatation and tortuosity of the superficial veins. B, the same, two weeks after excision of the fistula

As viewed at operation, the proximal artery and vein are usually dilated (fig. 4). The artery distal to the fistula is more frequently small, the size depending on the amount of blood shunted away from it through the fistulous communication. The vein distal to the fistula is usually dilated because of the shunting of arterial blood into it. In the region of the fistula all collateral branches, both venous and arterial, are increased in size.

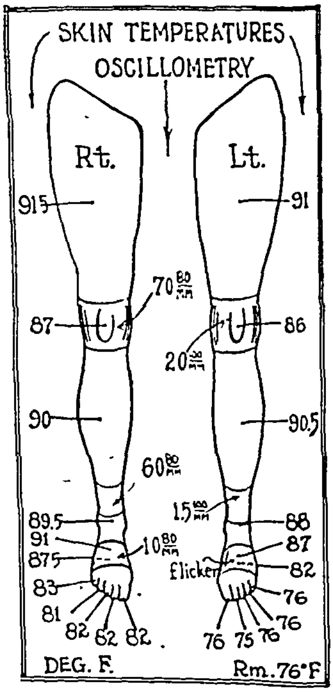

Fig. 3.—Left femoral arteriovenous fistula. Note decreased oscillations and skin temperatures distal to the lesion.

SYSTEMIC MANIFESTATIONS OF ARTERIOVENOUS FISTULAS

On physical examination of the patients with arteriovenous fistulas the heart usually presents no abnormalities. However, in many patients there is an alteration in the size of the heart which can be detected only by the decrease in the transverse diameter of the heart as measured in the teleoroentgenogram after operative eradication of the fistula.[3] On only relatively infrequent occasions is this increased size in excess of the normal standards, therefore it is noted only by the comparison of films made before and after removal of the fistula (fig. 5). Occasionally, however, the heart may become considerably enlarged (fig. 6). Since the change is reversible soon after removal of the fistula, it is assumed that this enlargement represents dilatation rather than true hypertrophy. In patients with fistulas of long standing irreversible hypertrophy may occur. In a small group of patients specially studied, changes occurring in the size of the heart immediately on obliteration of the fistula by compression have not been observed.[4]

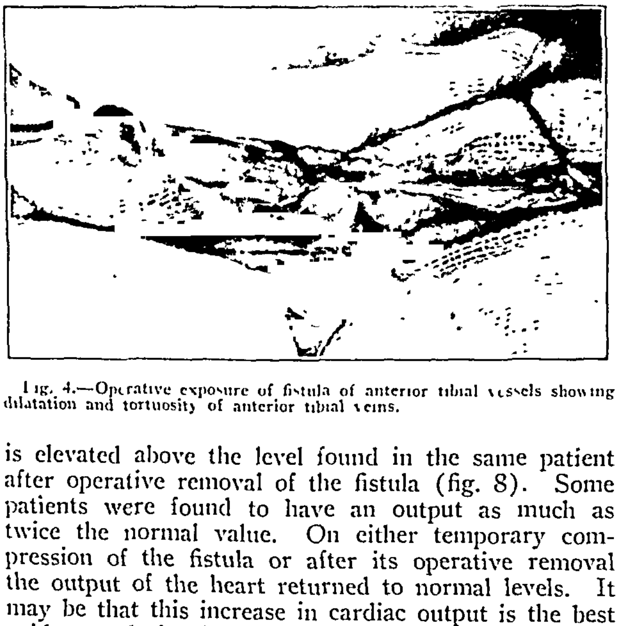

Fig. 4.—Operative exposure of fistula of anterior tibial vessels showing dilatation and tortuosity of anterior tibial veins.

Cardiac output measurements have been made on 47 of our patients by means of the critically damped low frequency ballistocardiograph[5] (fig. 7). This instrument is used to measure the cardiac output from the recoil of the body resulting from each heart beat. The validity of the ballistocardiograph in patients with arteriovenous fistulas has been confirmed by comparative studies with almost simultaneous cardiac output determinations by the technic of right atrial catheterization.[1] Our observations revealed that in slightly over one half of the patients studied, the basal cardiac output is elevated above the level found in the same patient after operative removal of the fistula (fig. 8). Some patients were found to have an output as much as twice the normal value. On either temporary compression of the fistula or after its operative removal the output of the heart returned to normal levels. It may be that this increase in cardiac output is the best evidence of the functional size of the fistula,[6] since either actual measurement of the size of the fistula or estimation of its size from the physical signs is subject to considerable error. Although those patients with the greatest increase in cardiac output had fistulas involving large vessels, it must be remembered that a fistula involving the larger vessels, such as the femoral artery and vein, may actually be of small size and accompanied by only a minimal increase in cardiac output. We have been unable to confirm the observation that the actual proximity of the fistula to the heart is in itself an important factor.[7] It appears to us that a fistula of a vessel close to the heart may cause either a large or small increase in cardiac output. The size of the fistula and of the vessels feeding it are more important than its position in determining the amount of blood flowing through it.

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[2] (a) Brown, G. E.: Abnormal Arteriovenous Communications Diagnosed from the Oxygen Content of the Blood of the Regional Veins, Arch. Surg. (pt. 1) **18:** 807 (March) 1929. (b) Ellis, L. B., and Weiss, S.: The Local and Systemic Effects of Arteriovenous Fistulae, Ann. Surg. **112:** 840, 1940.

[3] Pendergrass, R. C.: Cardiac Changes in Arteriovenous Fistula, Am. J. Roentgenol. **53:** 423, 1945.

[4] Elkin, D. C., and Pendergrass, R. C.: Unpublished observations.

[5] (a) Nickerson, J. L., and Curtis, H. J.: The Design of the Ballistocardiograph, Am. J. Physiol. **142:** 1, 1944. Nickerson, J. L.; Warren, J. V., and Brannon, E. S.: The Cardiac Output in Man: Studies with the Low Frequency, Critically Damped Ballistocardiograph and the Method of Right Atrial Catheterization, J. Clin. Investigation **26:** 1, 1947. (b) Warren, J. V.; Nickerson, J. L., and Elkin, D. C.: The Cardiac Output in Patients with Arteriovenous Fistulas, to be published.

[6] Starr, I.: Clinical Studies with the tive Failure, on Digitalis Action, on Chang Certain Acute Experiments, Am. J. M. Sc. Nickerson and Elkin.[5b]

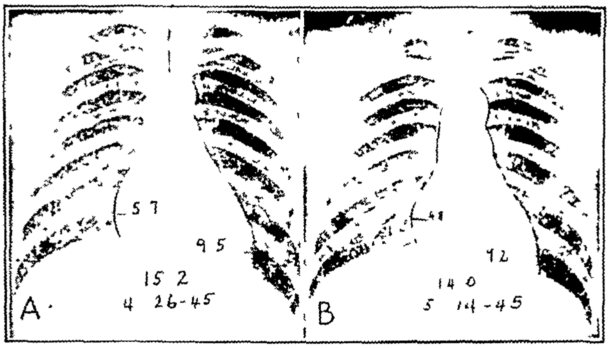

Fig. 5 *A*, femoral arteriovenous fistula Preoperative teleoroentgenogram of the heart showing approximately normal size and contour *B*, postoperative teleoroentgenogram of the same patient showing a decrease in the size of the heart

Arterial pressure measurements in our patients have not revealed striking abnormalities except that the pulse pressure is usually increased caused predominantly by a lowering of diastolic pressure. As has been pointed out by others, the pulse may assume the character seen in aortic insufficiency with a rapid upstroke and decline, tending toward a so-called water-hammer pulse. The heart rate in most of our patients was not remarkable In some, however, particularly those with fistulas involving large vessels, the basal pulse rate was somewhat elevated above normal. Although the local venous pressure about the fistula may be elevated, the venous pressure elsewhere in the body, including the right atrial pressure, is normal.[1] Roentgenographic examination may reveal evidence of pulmonary congestion. Generalized edema may occur in rare instances but is not common except in patients with a fistula of large size or long duration.

Observations on the blood volume were made in 40 of our patients.[8] The plasma volume was determined by the use of the blue dye T 1824. The total blood volume was calculated from the plasma volume and hematocrit reading. These data are reported in detail elsewhere, but in general slightly over half of the patients showed no difference in blood volume before and after operative removal of the fistula. On the other hand, the remaining patients showed a significant decrease in blood volume after removal of the fistula. This change amounted to as much as 1,000 cc. per square meter of body surface (fig. 9). The postoperative values in these patients were within the usually accepted normal range, hence it is interpreted that they had a significant elevation of blood volume with the fistula intact. This increase was not well correlated with the increase in cardiac output or heart size, but usually the larger blood volumes were observed in patients with clinical evidences of a large fistula.

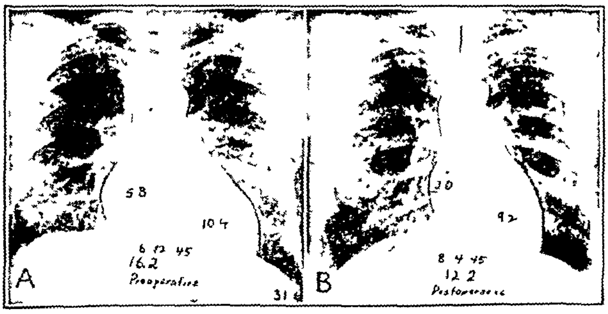

Fig 6—*A*, femoral arteriovenous fistula. Preoperative teleoroentgenogram of the heart showing an increase in the transverse diameter *B*, the same after excision of the fistula showing return to normal size

Although not present in our patients, it is well recognized that frank congestive heart failure may occur either early or late in the course of the condition. The increases in blood volume and heart size noted in some of our patients may actually have meant incipient cardiac failure.

Several circulatory changes occur on temporary occlusion of the fistula. Occlusion can be produced manually or with a blood pressure cuff.[9] The most commonly recognized of the circulatory responses is the slowing of the pulse rate, usually referred to as Branham's sign.[10] We have observed that this occurs in almost all instances in which compression of the fistula is possible and has not been observed in any of our patients with simple arterial aneurysms. Hence, we believe that this slowing of the pulse rate is a valuable diagnostic sign in the differentiation of purely arterial lesions from those which involve an arteriovenous communication. As previously found,[11] this change in the pulse rate is blocked by atropinization; hence it is apparently mediated by the vagus nerve (fig. 10). In addition to, and independent of, the pulse changes, we have found that there is almost immediate lowering of the cardiac output and stroke volume of the heart on compression of the fistula. This latter reaction is not blocked by atropine, and since it occurs so rapidly and without change in right atrial pressure,

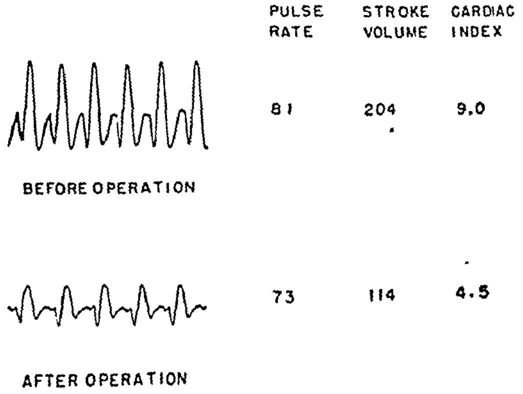

Fig 7.—Comparative ballistocardiograms before and after excision of a femoral arteriovenous fistula

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7. Holman, E.: The Immediate and Late Treatment of an Arteriovenous Fistula, Ann. Surg. **122**: 210, 1945

8 Warren, J. V., and Elkin, D. C.: The Blood Volume in Patients with Arteriovenous Fistulas, to be published

9 Nickerson, J L, Elkin, D. C., and Warren, J. V.: The Effect of Temporary Occlusion of Arteriovenous Fistulas on the Heart Rate, Stroke Volume and Cardiac Output, to be published.

10. Branham, H. H: Aneurismal Varix of the *Femoral Artery* and Vein Following a Gunshot Wound, Internat. J Surg. **3**: 250, 1890.

11. Lewis, T, and Drury, A. N.: Observations Relating to Arteriovenous Aneurisms, *Heart* **10**: 301, 1923. Kramer, M., and Kahn, J. H.: Unpublished observations Ellis and Weiss[2b]

it appears to be a nervous reflex related to the sudden change in resistance against which the heart must pump. The pulse pressure decreases on occlusion of the fistula because of the rise in diastolic pressure, thus returning the character of the pulse to a normal type.

COMMENT

The fact that a small and relatively unimpressive local lesion can bring about these varied circulatory reactions has aroused the interest of the members of the medical profession for many years. Even though considerable study of the problem has been carried out, we remain so ignorant of many basic facts regarding the circulation that a thoroughgoing explanation of all the phenomena associated with arteriovenous fistulas is not possible at this time. We are quite unaware, for instance, of the factors regulating the size of the blood volume in normal subjects. Enough new advances have been made, however, to warrant a reevaluation of the mechanisms which result in the circulatory manifestations of arteriovenous fistulas.

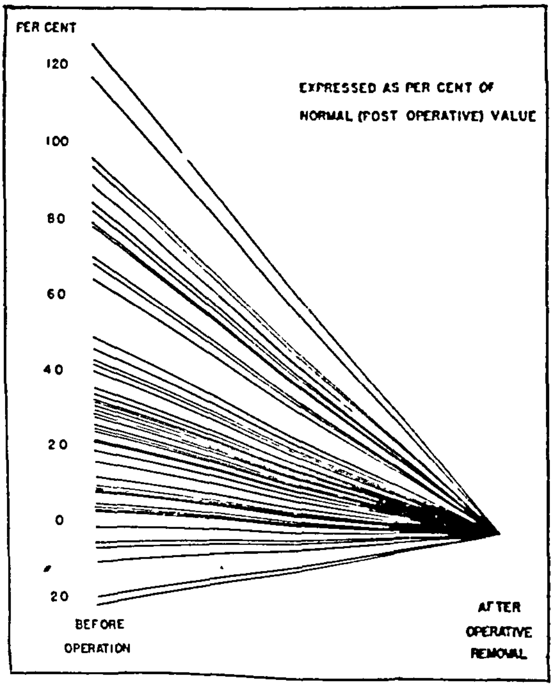


Fig 8.—Summary of observations regarding the effect of arteriovenous fistula on cardiac output. It is noted that in many instances there is a pronounced decrease in output after operative removal. A change of less than 20 per cent in cardiac output is considered within the range of normal variation.

The basic alteration in the circulation is a direct and sizable communication between an artery and a vein. Because of the difference in pressure in the two vessels blood will flow from artery to vein. The amount of blood shunted will depend, at least in part, on the difference in pressure between the two vessels and the size of the fistulous tract. It will be limited by the total amount of blood flowing into the area. Thus, a fistula involving a large artery might either result in a large or small shunt of blood, while a fistula fed from a small artery must be limited in size by the relatively small arterial inflow. The increase in cardiac output noted in our patients, probably an index of the amount of blood shunted, demonstrates this fact.

The other local changes in the vessels near the fistula are of interest. Since there is a direct opening from artery into vein, at some area in the vein one would expect an increased pressure, although it might be extremely small. Because of the elasticity and capacity of the venous system this increase need not become widespread. How far this pressure would spread depends on such factors as the size of the fistula, the elasticity of the vein, the valves in the vein and the size of the venous bed draining the area. Actual observations of the local changes in pressure fit with these concepts. The dilated venous channels appear to result from the increased volume and pressure of blood in the venous system locally. The veins may be dilated without much increase in pressure. Thus, as in filling a balloon the first increments of gas serve primarily to distend and fill it out, only later does an additional volume significantly increase the pressure; which is affected without much change in size.

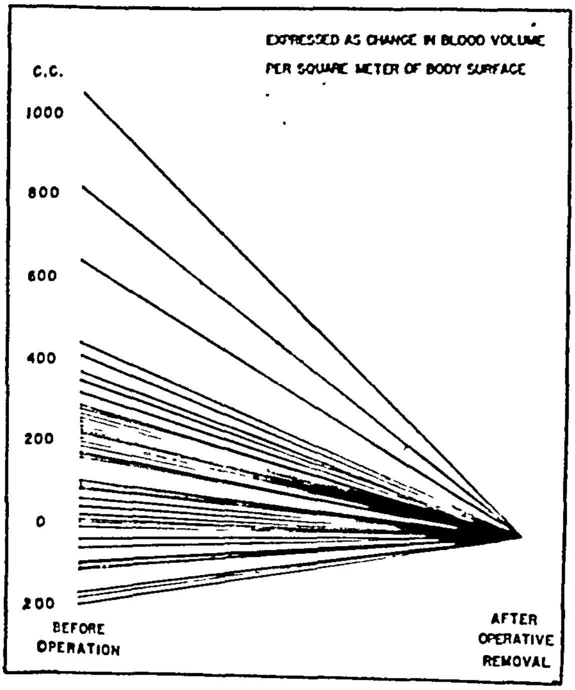


Fig. 9.—Composite chart showing decrease in blood volume after operative removal of an arteriovenous fistula. A change of 200 cc. in blood volume is considered within the range of normal variation.

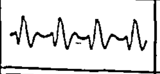
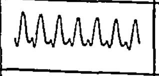
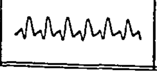
	BALLISTOCARDIOGRAM	PULSE RATE	STROKE VOLUME	CARDIAC INDEX
FISTULA OPEN		86	140	6.2
FISTULA OCCLUDED		62	110	3.5
AFTER ATROPINE FISTULA OPEN		120	151	9.3
AFTER ATROPINE FISTULA OCCLUDED		120	94	5.8

Fig. 10.—Popliteal arteriovenous fistula. Ballistocardiograms showing decrease in pulse rate, stroke volume and cardiac index on occlusion of the fistula before and after the intravenous administration of 2 mg. of atropine sulfate. Note that after administration of the drug the pulse rises but is not slowed on occlusion of the fistula. However, the stroke volume and cardiac index decrease.

The needs of the bodily tissues appear to play a major role in determining the output of the heart. With much blood shunted uselessly through the fistula, it is not surprising that in most instances there is a large cardiac output. The increased output occurs not as a result of changes in the pressure of blood presenting to the right side of the heart, but rather because of the changes on the arterial side of the circulation. As in other conditions in which the output of the heart is increased, such as anemia and exercise, the pulse rate may or may not be increased.

The increase in the size of the heart in many patients with an arteriovenous fistula has been demonstrated many times. It has been suggested that this is due to the increased blood volume. Experiments carried out on dogs by Holman [12] showed that variations in the blood volume were accompanied by a definite change in the size of the heart. The relative alterations in blood volume in these animals, however, were much greater than those seen in patients with arteriovenous fistulas. In addition, studies on normal human subjects have revealed that on rapidly varying the blood volume approximately 1 liter, no significant change in the size of the heart is noted.[13] Finally, our observations failed to demonstrate a good correlation between heart size and blood volume. Although in general those patients with large increases in blood volume had greater changes in heart size, there were noticeable exceptions, in which there was striking change in one without change in the other. We believe, therefore, that while the changes in blood volume may contribute some to the variation in cardiac size seen in these patients, other important factors probably exist. In patients with sustained increased demands on their hearts, such as those with severe anemia, thyrotoxicosis or hypertension, there may develop cardiac enlargement. The increase in the size of the heart in patients with arteriovenous fistulas may be on a similar basis. Just as a group of patients with the same degree of hypertension may demonstrate widely variable amounts of cardiac enlargement, one would not expect a direct correlation of the size of the fistula with the size of the heart.

There has been considerable controversy regarding the blood volume in patients with arteriovenous fistulas. Our observations support the belief that in at least some patients an increase does occur. Holman's [7] explanation that this increase results as a compensatory factor for that blood diverted through the fistula does not appear to offer an adequate explanation. One must be careful to distinguish between the actual volume of blood flow and the blood volume. A part of the body, such as the hand, may contain little blood yet have a large amount of blood flowing through it per minute. It has been suggested that the increased blood volume may represent the plethora seen in cardiac failure in general, rather than anything specifically due to the arteriovenous fistula. This may be true, although none of the patients in whom we found the elevated blood volume, had frank congestive heart failure. Another possibility is that with the distention of the vascular bed in the area of the fistula and great veins, the rest of the body will have a subnormal amount of blood. Thus, the mechanisms controlling the amount of blood may be stimulated, and as a result more blood is produced.

SUMMARY

The large number of vascular injuries in World War II have presented us with the unusual opportunity of observing almost 400 patients with arteriovenous fistulas. The local and systemic effects of this type of lesion on the circulation have been studied. Particular attention has been paid to changes in the size of the heart, cardiac output and blood volume. In many of our patients the cardiac output and blood volume were elevated above normal levels and the size of the heart was increased. After operative eradication of the fistula there was a return of these functions to normal. In none of our patients did there develop frank congestive failure of the heart. In addition, studies have been made of the circulatory changes which occur on temporary occlusion of the fistula.

A more nearly complete and rational explanation of the genesis of the effects of an arteriovenous fistula on the circulation awaits an extension of our basic knowledge in regard to the circulatory system.

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[12] Holman, E.: Arteriovenous Aneurysm, New York, The Macmillan Company, 1937.

[13] Weens, H. S.; Brannon, E. S., and Warren, J. V.: Unpublished observations.

CARONAMIDE FOR INCREASING PENICILLIN PLASMA CONCENTRATIONS IN MAN

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WILLIAM P. BOGER, M.D.
CHRISTOPHER C. SHAW, M.D.
and
A. KATHRINE MILLER, Ph.D.
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A new drug, caronamide,[1] when given orally to patients receiving penicillin produces a physiologic and reversible inhibition of the excretion of this antibiotic, which results in elevation of the concentration of penicillin in the plasma.

The primary objective of penicillin therapy is the maintenance of therapeutic concentrations of the antibiotic in the body tissues, but there appears to be no general agreement concerning therapeutic concentrations. Nor has it yet been made clear whether the maintenance of a constant level of penicillin plasma concentration is more desirable than the attainment of intermittent and temporary high levels. There does appear to be general agreement, however, that the attainment of high concentrations of penicillin is desirable.

It is difficult to attain elevated concentrations because of the rapidity with which penicillin is absorbed from the site of injection and excreted by the kidneys. Efforts have been made to maintain plasma concentrations of the drug above the commonly accepted therapeutic level (0.03 unit per cubic centimeter) [2] (*a*) by increasing the dosage of penicillin and by giving injections more frequently; (*b*) by varying the route of administration (constant intravenous infusion and intramuscular drip); (*c*) by slowing the absorption of penicillin (cooling the site of injection and using a suspension of penicillin in beeswax and oil); (*d*) by suppressing the excretion of penicillin by the renal tubules (iodopyrin injection

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The work herein reported was made possible by the cooperation of Garfield C. Duncan, M.D., Director of the Division of Medicine, Pennsylvania Hospital, who granted permission for the study of patients on the medical wards.

[1] Caronamide is 4′-carboxyphenylmethanesulfonanilide and is prepared by Sharp & Dohme, Inc., Philadelphia.

[2] Meakins, J. C.; Smith, F., and Gold, M. A.: A Comparative Study of Some Commercial Preparations of Oral Penicillin, Canad. M. A. J. **55**: 97-101 (Aug.) 1946

["diodrast" N. N. R.],[3] para-aminohippuric acid,[4] benzoic acid and sodium benzoate).[5]

The large losses of penicillin in the urine were observed early in the use of the antibiotic, and actually in the days when it was less plentiful it was recovered from the urine for reuse in therapy.[6] The need for sustained high plasma concentrations of penicillin for the treatment of resistant infections has stimulated renewed interest in the possibility of conserving the drug by reducing the rate of its elimination by the kidneys.

Normally, approximately 80 per cent of penicillin in the urine is excreted by the renal tubules[7] and only about 20 per cent by glomerular filtration. It is apparent, therefore, that an agent capable of suppressing the tubular excretion of penicillin would be of value to the extent of its efficiency in producing such a suppression without causing toxic manifestations in the patient. It was first noted that iodopyrin injection, a commonly used radiopaque medium employed in urography and for determining the functional capacity of the renal tubules, was capable of suppressing the excretion of penicillin.[3] Para-amino-hippuric acid, which also is used to determine the functional capacity of the renal tubules, has been found to suppress the excretion of penicillin.[8] Thus two substances that were known to be excreted by the renal tubules were found to inhibit the excretion of a third substance, penicillin.

It has been shown that by the maintenance of high plasma concentrations of either iodopyrin injection or para-aminohippuric acid it is possible to suppress completely the excretion of penicillin by the tubules. This requires, however, the intravenous administration of such large amounts of either of the two compounds that their routine use to inhibit the excretion of penicillin is not practical. Nevertheless, both substances have been applied successfully against diseases whose treatment requires extremely high penicillin plasma concentrations.[9]

This report describes the clinical application of caronamide,[10] an orally effective compound of low toxicity and capable of producing a reversible inhibition of penicillin excretion by the renal tubules. The concept of action of this drug has been presented by Beyer,[7b] who stated that iodopyrin injection and para-aminohippuric acid act on a "mass action" basis to saturate functionally the transport mechanism of the renal tubules and thus inhibit the elimination of penicillin. The effectiveness of caronamide, however, depends on a "substrate competition between penicillin, which is excreted by the tubules, and 4'-carboxyphenylmethanesulfonanilide, which is essentially refractory to excretion by that transport mechanism."[7b]

The extensive laboratory investigation of the physiologic,[11] pharmacologic,[12] toxicologic[13] and bacteriologic[14] properties of caronamide justified clinical investigation.

ORAL ADMINISTRATION OF PENICILLIN AND CARONAMIDE

Six afebrile patients without apparent renal, cardiac or hepatic disease were studied for a period of six days. During the first forty-eight hours (the control period) penicillin alone was administered every four hours; during the second forty-eight hours (the drug-treatment period) both penicillin and caronamide were given together every four hours, and, finally, during the third period of forty-eight hours (the postdrug control period) penicillin only was administered every four hours. Thus each patient was observed during two control periods and one treatment period, each phase of the experiment being sufficiently long to permit equilibration of both penicillin and caronamide in the body tissues. Blood specimens for penicillin assay[15] were drawn throughout the night and day and were timed so that the composite data would provide information concerning the plasma concentrations one, two, three and four hours after the administration of caronamide and/or penicillin. The times for drawing samples were the same during the three phases of the experiment. Forty-two penicillin assays were performed on blood specimens from 1 patient, and thirty-four were done on blood samples from each of the other 5 patients.

All 6 patients were given orally 100,000 units of penicillin at four hour intervals. The same lot of crystalline sodium penicillin G was used throughout, and the content of a vial containing 100,000 units was dissolved in 10 or 15 cc. of tap water immediately before

TABLE 1.—*Oral Penicillin and Oral Caronamide* *

Time After a 100,000 Unit Oral Dose of Penicillin	Average Penicillin Concentrations (Units/Cc of Plasma) Obtained During the Two Control Periods	Average Penicillin Concentrations (Units/Cc. of Plasma) Obtained During Caronamide Therapy	Fold Increase
1 hr.	0.061 (13)†	0.228 (6)	3.7
2 hr.	0.042 (79)	0.102 (36)	2.4
3 hr	0.010 (13)	0.071 (6)	7.1
4 hr	0.010 (18)	0.036 (18)	3.6

* Data from 6 patients, A, B, C, D, E and F, given 100,000 units of penicillin orally every four hours for six consecutive days. On the third and fourth days each patient was given, orally, 2 Gm. of caronamide every four hours

† Figures in parentheses indicate the number of penicillin assays making up the average.

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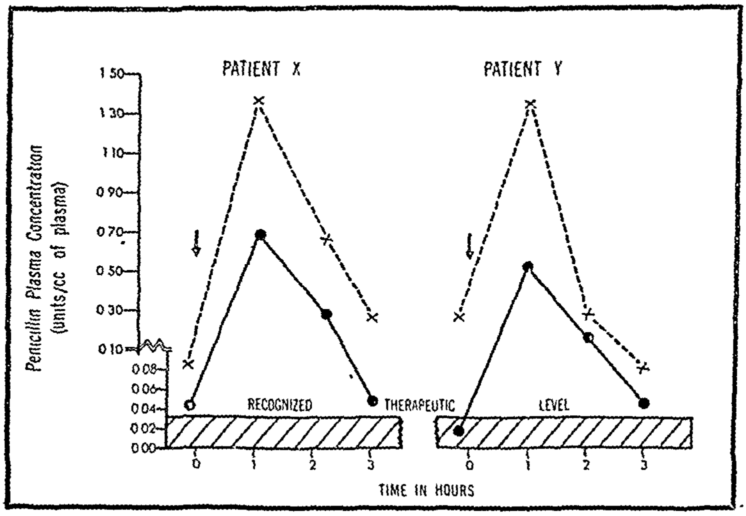
administration. All medicaments were given by or in the presence of one of us. The hospital routine was not altered in any way during this study; fluids were taken freely, diet was unrestricted and no antacids were used. No measures were employed to enhance penicillin levels other than the administration of caronamide.

Of the 6 patients studied, each for a period of six consecutive days, 2 showed remarkable increases in their penicillin plasma concentrations during the period of administration of 2 Gm. of caronamide in tablet form every four hours; 3 patients showed significantly higher levels when this drug was administered, and 1 patient failed to demonstrate any increase in penicillin plasma concentration when the caronamide was administered concomitantly with the antibiotic. This same patient showed but a single penicillin level above 0.02 unit per cubic centimeter during the two control periods when penicillin was administered alone.

Penicillin plasma concentrations obtained during both control periods have been averaged and compared to similar values obtained during the forty-eight hour period when penicillin and caronamide were administered together. It will be observed, from inspection of table 1, that the average penicillin plasma concentrations during the period of administration of the new compound were from 2.4 to 7.1 times (average 4.2) greater than those obtained when penicillin alone was administered.



Two patients studied on consecutive days, each patient serving as his own control It will be noted that plasma concentrations below 0.10 unit per cubic centimeter are presented on a magnified scale The solid line indicates the control phase (predrug) in which 50,000 units of penicillin were given intramuscularly every three hours. The broken line indicates the drug phase, in which 50,000 units of penicillin were given intramuscularly and 1.5 Gm of caronamide were given orally every three hours The arrow indicates the injection of 50,000 units of penicillin

It would appear, therefore, that 2 Gm. of caronamide administered orally every four hours enhances from two to seven times the penicillin blood levels achieved by the oral administration of 100,000 units of crystalline sodium penicillin G in aqueous solution. Values obtained during the postdrug control period compare closely with those in the control period. This observation rules out the possibility that the elevation of levels during the treatment period was merely the result of continued penicillin therapy. The comparable values in the preliminary and postdrug control periods further indicate the prompt recovery of the penicillin transport mechanism. A slight tendency for elevation of the values in the postdrug-control period probably reflects some delay in the elimination of caronamide.

INTRAMUSCULAR PENICILLIN AND ORAL CARONAMIDE

The first 2 patients studied were two young women (X, Y) receiving routine antisyphilitic therapy (50,000 units of penicillin every three hours). Crystalline sodium penicillin G was substituted for that being used routinely, and during a twenty-four hour control period 50,000 units in 2 cc. of sterile isotonic sodium chloride solution were given every three hours. During a second twenty-four hour period the same dose of intramuscular penicillin and 1.5 Gm. of oral caronamide were given every three hours. A penicillin dose response curve was established each day by assays on blood taken immediately before and then one, two and three hours after an injection of 50,000 units of penicillin. The accompanying illustration shows graphically the enhancement of penicillin levels by the oral administration of caronamide; the increases were striking and were of the order of from twofold to fivefold.

With this preliminary information obtained from only 2 patients it was believed justifiable, nevertheless, to regard control and treatment periods of twenty-four hours each as ample to permit equilibration of both penicillin and caronamide. To favor distribution of both agents in the body fluids, however, a priming dose of penicillin (100,000 units) was given at the beginning of the initial control period and a priming dose of caronamide (3 Gm.) at the beginning of the treatment period. For the sake of uniformity and comparison with the work done with oral penicillin, the intervals between medication were maintained at four hours and specimens of blood for penicillin assay were obtained at varying times after individual doses of penicillin.

Two patients (V, W) were given 50,000 units of penicillin every four hours during the preliminary and postdrug control periods; during the treatment period 50,000 units of penicillin plus 2 Gm. of caronamide were given every four hours. The penicillin assay values were averaged, and these data are presented in table 2 A. It is noted that the increase of penicillin blood levels of patients under treatment with caronamide were from 2.9 to 7.3 (average 5.17) times. The magnitude of enhancement is comparable to that obtained in the experiment with oral penicillin.

A single patient (Z) was given 2 Gm. of caronamide every four hours, and 100,000 units of penicillin were administered intramuscularly every four hours. From the assay values (table 3 A) it is apparent that caronamide exerted a favorable effect by increasing twofold to threefold the penicillin plasma concentrations observed in the control periods. It is interesting to note that the concentrations of the drug in the plasma after the administration of 100,000 units of penicillin to patient Z are not so high as those seen in patients V and W following 50,000 units of penicillin and caronamide.

Measurable increases of plasma concentrations were obtained in 5 patients (X, Y, U, W, Z) when 1.5 and 2 Gm. of caronamide were given every three and four hours, respectively. To determine whether smaller and more frequent doses were more or less effective 1 Gm. of caronamide was given every two hours to three patients. Two of these patients (T, U) received intramuscularly 50,000 units of penicillin every four hours during the control periods; during the treatment phase they received 50,000 units of penicillin every four hours plus 1 Gm. of caronamide every two hours. The average data (table 2 B) show a slight enhancing effect at the end of two, three and four hours, but not to the degree found when 2 Gm. of the compound was administered every four hours. A single patient (S) given 1 Gm. of caronamide every two hours showed only a slight effect of the drug on penicillin plasma concentrations (table 3 B).

TABLE 2—*Intramuscular Penicillin and Oral Caronamide*

Time After Injection of 50,000 Units Penicillin Intramus	Average Penicillin Concentrations (Units/Cc of Plasma) Obtained During Two Control Periods	Average Penicillin Concentrations (Units/Cc of Plasma) Obtained During Caronamide Therapy	Fold Increase
	A*		
1 hr	0 644 (4)†	1 843 (2)	2 9
2 hr	0 261 (8)	0 921 (4)	3 5
3 hr	0 098 (4)	0 686 (2)	7 0
4 hr	0 016 (12)	0 1 1 (6)	7 3
	B‡		
½ hr	1 040 (2)†	0 8 0 (2)	•
1 hr	0 600 (4)	0 471 (2)	• •
2 hr	0 219 (8)	0 343 (4)	1 6
3 hr	0 065 (4)	0 086 (2)	1 3
4 hr	0 020 (14)	0 070 (8)	5

* Data from 2 patients, V and W, given 50 000 units penicillin intramuscularly every four hours and 2 Gm caronamide orally every four hours

† Figures in parentheses indicate the number of penicillin assays making up the average

‡ *Data from 2 patients, T and U, given 50 000 units penicillin intramuscularly every four hours and 1 Gm caronamide orally every two hours*

TABLE 3—*Intramuscular Penicillin and Oral Caronamide*

Time After Injection of 100 000 Units Penicillin Intramus	Average Penicillin Concentrations (Units/Cc of Plasma) Obtained During Two Control Periods	Average Penicillin Concentrations (Units/Cc of Plasma) Obtained During Caronamide Therapy	Fold Increase
	A*		
1 hr	1 210 (2)†	1 840 (1)	1 5
2 hr	0 464 (4)	0 888 (1)	1 9
3 hr	0 108 (2)	0 228 (1)	2 1
4 hr	0 034 (6)	0 114 (3)	3 4
	B‡		
½ hr	2 702 (1)†	2 710 (1)	•
1 hr	1 380 (1)	0 680 (1)	
2 hr	0 225 (4)	0 343 (2)	1 5
3 hr	0 064 (2)	0 043 (1)	
4 hr	0 003 (7)	0 021 (4)	7 0

* Data from 1 patient, Z given 100 000 units penicillin intramuscularly every four hours and 2 Gm caronamide orally every four hours

† Figures *in parentheses* indicate the number of penicillin assays making up the average

‡ Data from 1 patient, S given 100 000 units penicillin intramuscularly every four hours and 1 Gm *caronamide orally every two hours*

EFFECT OF ORAL CARONAMIDE ON PENICILLIN IN BEESWAX AND OIL

Since the suspension of penicillin in beeswax and oil slows the rate of absorption of penicillin from the site of injection, it was of interest to determine whether or not the oral administration of caronamide would prolong or elevate penicillin plasma concentration following the single injection of penicillin in beeswax and oil (Romansky).

Three patients were studied. After the injection of 300,000 units of penicillin in beeswax and oil, penicillin assays were done on the plasma obtained at four hour intervals for forty-eight hours. A twenty-four hour period was allowed to elapse in order to exhaust whatever reservoir of penicillin might remain, and the same patients then were given a second injection of 300,000 units of penicillin in beeswax and oil and 2 Gm. of caronamide every four hours thereafter. Samples of blood were drawn at four hour intervals for seventy-two hours and were assayed for penicillin. This study failed to show any enhancing effect on the penicillin plasma levels, but it is believed that specimens of blood for assay were drawn at a time when the enhancing effect on blood levels probably was minimal. It has since been observed that the larger portion of an individual dose of caronamide is excreted within four hours, and it was four hours after administration of a dose of caronamide that specimens of blood for assay were obtained. Several additional patients have been studied. Specimens for assay were drawn at more favorable times with reference to the caronamide doses, and evidence has been obtained that caronamide does increase the penicillin plasma concentration after the administration of the antibiotic in beeswax and oil.

COMMENT

Throughout this investigation each patient was studied not only while receiving the drug but also in a preliminary control period and a postdrug control period, thus serving as his own control. This is essential particularly with reference to the oral administration of penicillin, since there is such a tremendous individual variation in the absorption of this antibiotic that patient to patient comparisons of penicillin plasma concentrations are of limited value. Despite the small number of patients studied during the course of this investigation, the fact that each individual served as his own control lends additional significance to the data presented.

Six patients given oral penicillin and oral caronamide showed increases of penicillin blood levels of from two to seven times those observed during control periods. Caronamide was given in doses of 2 Gm every four hours. Buffering agents were not administered with the penicillin, patients were permitted to take fluids freely, meals were given in accordance with hospital routine and no effort was made to enhance penicillin levels apart from the administration of caronamide.

Eight patients were given penicillin intramuscularly and caronamide orally. Five of these patients given either 1 5 Gm of caronamide every three hours (X, Y) or 2 Gm. every four hours (V, W, Z) showed enhancement of penicillin plasma levels of from two to seven times those observed during control periods. Three patients (S, T, U) given only 1 Gm of caronamide every two hours failed to show the same degree of enhancement of penicillin concentrations, but some effect of the drug was indicated, particularly toward the end of the penicillin dose-response curve.

The study of 3 patients to whom penicillin in beeswax and oil was administered provided equivocal results with respect to an effect of caronamide either in the enhancement or prolongation of the penicillin plasma concentrations. This probably was due to inappropriate timing for collection of blood samples for penicillin assay. A revised program of study of 6 additional patients indicates that caronamide does act to increase plasma concentrations when penicillin is administered in beeswax and oil.

These preliminary studies indicate that caronamide produces an elevation of penicillin plasma concentration when penicillin is administered either orally or intramuscularly. Caronamide probably influences favorably the plasma concentrations following the administration of penicillin in beeswax and oil. Further study is required to determine more closely the effect of caronamide on plasma concentrations following the administration of penicillin in beeswax and oil.

Although doses of 1.5 Gm. every three hours or 2 Gm. every four hours have shown an effect in enhancing penicillin plasma concentration, it is probable that larger doses of caronamide may be necessary. Although no optimal dosage schedule for administration of caronamide can be suggested from the results obtained in this preliminary clinical study, it would appear that from twofold to sevenfold enhancement of penicillin plasma concentration may be anticipated if from 1.5 to 2 Gm. of the drug are given concomitantly with penicillin every three and four hours, respectively.

No evidence of systemic toxicity was noted in this series of patients to whom this new compound was administered, but in the course of extended clinical experience with caronamide it is unlikely that some type of sensitivity or toxic manifestation will fail to be observed.

The work here reported establishes the fact that caronamide is effective in enhancing penicillin plasma concentrations. Caronamide is now being applied to the therapy of patients at the University of Pennsylvania Hospital and Philadelphia General Hospital. The results of this work will be the subject of a later communication.

CONCLUSION

A new drug, caronamide,[1] when administered orally elevates the penicillin plasma concentrations two to seven times following the oral and parenteral administration of penicillin. Caronamide gives promise of great therapeutic usefulness in the treatment of conditions which require high penicillin blood levels.

THE ELIGIBILITY OF SYPHILITIC PERSONS FOR LIFE INSURANCE

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The most recent communications on the mortality of syphilis are those of Schamberg[1] (a review of the literature to 1944), Heller and Bruyere,[2] Smith and Bruyere[3] and Rosahn.[4] These papers pave the way for a revision of policy regarding the insurability of syphilitic persons. It is the purpose of this paper to present such a policy.

The usual actuarial approach has been to compare the mortality rate in a group of known syphilitic patients (relatively small in number) with that in the population as a whole or in a select group of supposedly healthy persons. The data so obtained indicate that syphilis imposes an extra mortality hazard ranging from 138 to 188 per cent of expected mortality.[5]

All such studies to date are to an undeterminable extent inaccurate; and they are entirely inadequate to permit formation of a sound policy determining the insurability of syphilitic persons, for the following reasons:

1. The known syphilitic population is compared with a supposedly nonsyphilitic population, the latter of which, however, contains an unknown proportion of persons with actuarially unrecognized syphilis.

2. The published mortality data (in a syphilitic population) consider as a group persons with all stages and types of syphilitic infection, ranging from recently acquired (primary and secondary) syphilis, to various grave forms of late syphilis (e. g. cardiovascular and neurosyphilis). In the early cases the life expectancy is high, partly because most such patients are young at the time of infection and partly because the mortality from syphilis is concentrated within the period twenty or more years after infection. In the late cases the life expectancy is low, partly because these manifestations occur in older age groups and partly because of the inherent and inevitable mortality from syphilis itself (as in aneurysm).

3. The exact mortality due primarily or even secondarily to syphilis is not determinable from the causes of death provided on death certificates. There is reason to believe that in a syphilitic population the assigned cause of death may be in error by as much as 50 per cent, partly through inadvertence (the physician's inability to recognize the extent to which syphilis contributes directly or indirectly to death) and partly through intent (deliberate omission of syphilis as a primary or secondary cause of death in order to protect the patient, even post mortem, from disclosure of a "social disgrace").

4. Consideration is not given to the weighting of syphilis mortality figures by the fact that syphilis is primarily a disease of those in lower socioeconomic groups, which are subject to increased mortality risk from many other diseases and conditions (such as acute infections, tuberculosis and industrial hazards) and which are therefore not directly comparable to the population as a whole.

5. Consideration is not given to the adequacy of present day treatment methods. Such actuarial data as are available with respect to treatment relate to the prearsenical era (prior to 1910) or to the early days of metal chemotherapy (1910 to 1925). Moreover, the data do not relate treatment to the stage of syphilitic infection for which it was given.

It must be concluded, therefore, that actuarial studies of the mortality of syphilis so far made are incomplete, inaccurate and unsuitable for the determination of a policy in regard to the insurability of syphilitic persons. Further studies are urgently required, the character and scope of which should be determined by a conference group of clinicians and actuarial experts.

It is essential to point out, however, that studies of the mortality of syphilis as related to the adequacy of treatment will be, within the foreseeable future, *always* a generation out of date. The concept of what constitutes adequate treatment has been a constantly changing one since 1909, with the successive introduction of arsenic, fever, bismuth and now penicillin therapy. *With* the rapidly advancing and changing current progress in the chemistry and pharmacology of penicillin, it is reasonable to anticipate that the antibiotic therapy of syphilis is only in its infancy and that a few years hence penicillin may be abandoned in favor of a still more powerful agent. Since syphilis provides, to paraphrase Theobald Smith, the exquisite example of chronicity among infections, the effect on mortality of any

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This article was prepared as a memorandum at the request of the Veterans Administration. On March 18, 1947 the memorandum was submitted to and approved by the Subcommittee on Venereal Diseases, National Research Council, with the following membership: Drs. J. E. Moore, Chairman, Baltimore; E. Gurney Clark, New York; Harry Eagle, Baltimore; Hugo Muench, Boston; Harry Solomon, Boston; T. H. Sternberg, Los Angeles; John H. Stokes, Philadelphia, and T. B. Turner, [illegible]

[illegible] he Prognosis of Syphilis, Am. J. Syph., Gonor. [illegible]

[illegible] nd Bruyere, P. T.: Untreated Syphilis in the [illegible] During Twelve Years of Observation, J. Ven. Dis. Inform. [illegible]

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5. "Expected mortality" is, in actuarial terms, 100 per cent.

Suggestions as to Insurability of Syphilitic Persons

Type of Syphilis	Acceptability for Insurance after Average Adequate Treatment (See Next Column) Given during This Stage of Infection and after Probationary Period, If Any, Suggested in Column 4. (If "Accept," This Indicates as Standard Risk Unless Specified Substandard, in Which Case Percentage Increased Risk Is Suggested) Disability Insurance	Life Insurance	Average Adequate Treatment by 1947 Standards	Probationary Period Required After Treatment and Before Insurance Is Granted
Acquired				
Primary, early secondary, relapsing secondary or early latent (infection less than 2 yrs. duration) remaining seronegative for 2 or more yrs. after treatment	Accept	Accept	Penicillin 1.2 million or more U. given in 4 to 15 days; or 1,200 mg. or more oxophenarsine HCl, + 12 or more injections insoluble Bi; or equivalent	2 years
Primary, early secondary, relapsing secondary or early latent (infection less than 2 yrs. duration) remaining seropositive for 2 yrs. or more after treatment	Accept after retreatment for late latent syphilis	Accept after retreatment for late latent syphilis	As for late latent syphilis	*None required after suggested retreatment*
Late latent (infection more than 2 yrs. duration)	Accept regardless of serologic outcome after treatment given during late latency	Accept regardless of serologic outcome after treatment given during late latency	Penicillin 1.2 million or more U. given in 4 to 15 days; or metal chemotherapy *including 40 or* more injections arsenic and 16 or more Bi given within 6 to 12 mos.; or equivalent	None
Benign late (tertiary mucocutaneous, osseous or ocular [except optic atrophy])	Reject	Accept as 10 to 50% substandard risk, depending on interval between treatment and date of insurance application (mortality risk diminishes with passage of time)	Penicillin 2.4 *million or more U.* given in 7-21 days; or metal chemotherapy as for late latent syphilis	*None*
Benign late visceral (hepatic, gastric)	Reject	Reject		
Cardiovascular (aortitis, aortic insufficiency, aneurysm, coronary ostial stenosis)	Reject	Reject		
Neurosyphilis				
Asymptomatic; C. S. F. before treatment of indicated group *				
Group I	Accept after indicated treatment and probation	Accept after indicated treatment and probation	Penicillin 4 million or more U. in 8 to 15 days	2 yrs. during which C. S. F. must have been entirely normal on 2 successive occasions after treatment
Group II	Accept after indicated treatment and probation	Accept after indicated treatment and probation	Penicillin 6 million or more U. in 8 to 21 days	5 yrs. during which C. S. F. must have been entirely normal on 3 successive occasions
Group III	Reject	Reject		
Acute syphilitic meningitis	Reject	Accept as 10 to 15% substandard risk, depending on interval between treatment and date of insurance application (mortality risk diminishes with passage of time)	Penicillin 6 million or more U. in 8 to 21 days	5 yrs. during which patient remains clinically normal and C. S. F. entirely normal on 8 successive occasions
All other types (paresis, tabes, diffuse meningovascular neurosyphilis etc.)	Reject	Reject		
Congenital				
Early infantile (treated during this period, remaining seronegative, and with application for insurance in adolescence or adult life)	Accept	Accept	Metal chemotherapy 6 to 12 mos.; or penicillin 40,000 + U./Kg. in 8 to 15 days	2 yrs. or more after treatment
Early infantile (treated during this period but seropositive at time of insurance application in adolescence or adult life)	Reject (risk of interstitial keratitis or nerve deafness)	Accept after retreatment	Retreatment as for late latent acquired syphilis	None after retreatment
Latent (with or without stigmas; diagnosis based on serologic tests for syphilis)	Reject (see above)	Accept	As for late latent acquired syphilis	None after treatment
Interstitial keratitis	Reject	Accept	Penicillin 2.4 or more million U.; metal chemotherapy as for late latent acquired syphilis; either of these with or without fever therapy	None after treatment
Nerve deafness	Reject	Accept	As for interstitial keratitis	None after treatment
Benign late (mucocutaneous, osseous, ocular [except optic atrophy])	Reject	Accept as for acquired benign late syphilis	As for acquired benign late syphilis	None after treatment
Visceral (hepatic, gastric etc.)	Reject	Reject		
Neurosyphilis, all types	Reject	Reject		

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* See standard textbooks for description of cerebrospinal fluid (C. S. F.) groups in asymptomatic neurosyphilis.

B. When this investigation is completed there should be available, for the first time, an adequate statistical basis for determining the most effective method of treating syphilis. But this will be a matter of time. In the meanwhile and because experience with Veterans Administration hospitals indicates the desirability of improving and standardizing therapeutic procedures, the present technical bulletin is being published. It cannot and does not pretend to be the final word on the subject. It does, in our judgment, represent the best current thought on the subject.

C. This bulletin will deal with the management of syphilis other than neurosyphilis. The management of neurosyphilis is dealt with in another bulletin.[3] Physicians responsible for the care of patients with syphilis in Veterans Administration hospitals will be expected to follow the procedures outlined in these bulletins and to supplement the information which they provide by reference to such standard textbooks as those by Moore and Stokes.

2. *Classification of Cases.*—A. The following diagnostic classification will be used for the purposes of treatment:

1. Syphilis, primary: (*a*) seronegative; (*b*) seropositive.
2. Syphilis, secondary: (*a*) syphilis, secondary; (*b*) syphilis, secondary, relapsing (state type of relapse).
3. Syphilis, latent, early (less than four years since infection).
4. Syphilis, latent, late (four or more years since infection).
5. Syphilis, tertiary, mucocutaneous.
6. Syphilis, tertiary, osseous.
7. Syphilis, tertiary, ocular (except optic atrophy).
8. Syphilis, tertiary, visceral (except cardiovascular).
9. Syphilis, tertiary, cardiovascular, aneurysm (state location of saccular aneurysm).
10. Syphilis, tertiary, cardiovascular, aortic regurgitation.
11. Syphilis, tertiary, cardiovascular, aortitis (uncomplicated).
12. Syphilis, tertiary, neurosyphilis (the diagnostic classification of neurosyphilis is described in another bulletin.[3])
13. Syphilis, type undetermined.
14. Syphilis, congenital (include all manifestations).
15. Nonsyphilitic, biologic false positive serologic tests for syphilis.

B. In cases with significant involvement of more than one system (e. g., the cardiovascular and the central nervous), all diagnoses will be entered.

3. *Diagnosis.*—A. Antisyphilitic treatment will not be started until the diagnosis of syphilis is definitely established. The demonstration of Treponema pallidum by dark field examination is a positive indication for the *immediate institution of treatment.* The presence of a positive serologic test for syphilis in the absence of confirmatory clinical signs or a definite history of syphilis, is not necessarily proof of infection, except as described in the succeeding paragraphs. Variations in laboratory technic, clerical errors and biologic false reactions may each result in the reporting of positive serologic tests in the absence of syphilis. A biologic false positive serologic test for syphilis is particularly likely to occur after malaria, recent smallpox vaccination or other immunizing inoculations, acute infectious diseases, fevers, infectious mononucleosis and certain other conditions. A series of repeated quantitative serologic tests for syphilis (titered for units of reagin) may be helpful in differentiating true syphilitic from biologic false positive reactions. In early syphilis, especially, the titer tends to rise or remain high, while in false positive readings the titer tends to decline spontaneously until a negative reaction is obtained. In doubtful cases observation over a period of weeks or even months may be required to reach a final decision.

B. The Kahn and Wassermann tests are the standard serologic tests for syphilis in the Veterans Administration at the present time. A quantitative Kahn test should be performed wherever feasible, especially in the post-treatment observation of patients with early syphilis and in the differentiation of syphilitic and false positive serologic reactions. The examination of the spinal fluid will include a cell count, a quantitative test for total protein, a complement fixation test (with 1.0, 0.5, 0.25 and 0.1 cc. of spinal fluid) and a colloidal test (gold, benzoin or mastic).

C. The basic criteria for the diagnosis of the various phases of syphilis are the following:

1. (*a*) Syphilis, primary, seronegative. T. pallidum must be demonstrated by dark field examination of the chancre. The initial serologic test for syphilis and a second test performed on the fourth to sixth day of treatment must both be negative. If the repeat test is positive, the case must be considered and treated as one of seropositive primary syphilis.

(*b*) Syphilis, primary, seropositive. T. pallidum are demonstrated by dark field examination of the chancre, and the initial serologic test for syphilis is doubtful or positive; or, if the initial test is negative, it will have become positive during treatment. In cases where repeated dark field examinations are negative (lymph node aspiration for treponemes may be performed), the diagnosis rests on the presence of repeatedly positive serologic tests, especially with a rising titer of the quantitative test, or on a change of the serologic tests from negative to repeatedly positive.

2. (*a*) Syphilis, secondary. There are one or more clinical signs of secondary syphilis (generalized eruption, mucous patches, condylomas, generalized lymph node enlargement, "moth-eaten" alopecia, laryngitis and periostitis), and the serologic test for syphilis is repeatedly positive. Efforts should be made to demonstrate T. pallidum by dark field examination of skin or mucosal lesions.

(*b*) Syphilis, secondary, relapsing. The diagnosis depends on the appearance of some manifestation of relapse following completion of treatment or during the course of treatment. The type of relapse may be clinical (infectious, with mucosal and/or cutaneous lesions, neurologic, ocular, osseous or visceral) or serologic. Serologic relapses are more fully described in the section of this bulletin devoted to definition of treatment failures.

3 and 4. Syphilis, latent. The serologic test for syphilis is repeatedly positive, there are no clinical manifestations of the disease, and the spinal fluid is normal. Thorough study must be made to eliminate cardiovascular syphilis, and the possibility of biologic false positive serologic tests should be excluded. If the duration of the infection is known to be less than four years, the case is diagnosed as early latent. If it is of four or more years' duration, it is diagnosed as late latent. When the duration of infection is unknown, it is customary to classify those patients who have not yet attained their twenty-sixth birthday as early *latent.*

5. Syphilis, tertiary, mucocutaneous. There are gummatous, ulcerative or nonulcerative lesions of the skin and/or mucous membranes, and the serologic test for syphilis is repeatedly positive.

6. Syphilis, tertiary, osseous. There are late bone or joint lesions attributable to syphilis, and the serologic test is repeatedly positive. The pathologic process may be osteomyelitis, periostitis or arthritis.

7. Syphilis, tertiary, ocular. There are eye lesions attributable to syphilis, and the serologic test is repeatedly positive. The pathologic process may be iritis, uveitis, keratoiditis, keratitis or choroiditis.

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3. The Medical Management of Neurosyphilis, Veterans Administration Technical Bulletin (TB 10-26), March 27, 1947.

8. Syphilis, tertiary, visceral. There is a visceral lesion attributable to syphilis, and the serologic test is repeatedly positive. The lesion may be a hepatitis, hepatic cirrhosis, gumma of the stomach or some other condition not cardiovascular.

9. Syphilis, tertiary, cardiovascular aneurysm. There is a saccular aneurysm usually of the aorta, and the serologic test is repeatedly positive.

10. Syphilis, tertiary, cardiovascular, aortic regurgitation. There is an insufficiency of the aortic valve, and a repeatedly positive serologic test for syphilis.

11. Syphilis, tertiary, cardiovascular, aortitis (uncomplicated). There are symptoms and physical signs and/or roentgen changes indicative of aortitis and a repeatedly positive serologic test for syphilis.

12. Syphilis, tertiary, neurosyphilis. The criteria for the diagnosis of neurosyphilis is presented in another bulletin.[3]

13. Syphilis, type undetermined. This diagnosis is reserved for cases of apparently latent syphilis in which complete study, particularly examination of the spinal fluid, has not been possible.

14. Syphilis, congenital. There are stigmas of congenital syphilis or active physical signs or there is a definite history of syphilis in infancy or childhood, and the serologic test for syphilis is repeatedly positive. The active lesion most frequently encountered is interstitial keratitis.

15. Nonsyphilitic, biologic false positive serologic tests for syphilis. This diagnosis will be used in cases where the serologic test is positive but where there is no history, clinical evidence, or other laboratory findings permitting a diagnosis of syphilis. In these cases, the suggested diagnosis will be used until a positive diagnosis of syphilis can be made.

4. *Treatment Schedules.*—The only drugs authorized for use by Veterans Administration hospitals in the treatment of syphilis are penicillin, oxophenarsine hydrochloride (arsenoxide [mapharsen]), and bismuth subsalicylate in oil. Neoarsphenamine, arsphenamine and bismuth arsphenamine sulfonate ("bismarsen") will not be used. Penicillin should be administered in aqueous or normal saline solution, by intramuscular injection into the upper outer quadrant of the buttocks, or deltoids, using the right and left alternately. The penicillin solution should be prepared freshly, at least once a day, and should be stored in a refrigerator when not in use.

Schedule A consists of a total of 3,000,000 units of penicillin, administered in sixty individual doses of 50,000 units at three hour intervals, day and night, over a period of 7½ days.

Schedule B consists of a total of 6,000,000 units of penicillin, administered in one hundred and twenty individual doses of 50,000 units at three hour intervals, day and night, over a period of fifteen days.[4]

Schedule C is identical with schedule B so far as dosage and method of administration of penicillin is concerned. However, in addition to the penicillin, six doses of 60 mg. of oxophenarsine hydrochloride are also given, three during the first week of treatment and three during the second week. The initial dose of this drug should not be given on the same day that penicillin is started. For convenience, the oxophenarsine hydrochloride may be given on Monday, Wednesday and Friday or on Tuesday, Thursday and Saturday of each week.

Schedule D consists of forty injections of oxophenarsine hydrochloride and sixteen of bismuth subsalicylate in oil given over a period of twenty-six weeks as follows: weeks 1 to 5, oxophenarsine hydrochloride twice weekly and bismuth once weekly; 6 to 10, oxophenarsine hydrochloride twice weekly; 11 to 16, a bismuth compound once weekly; 17 to 21, oxophenarsine hydrochloride twice weekly, and 22 to 26, oxophenarsine hydrochloride twice weekly and a bismuth preparation once weekly.

Dosage: Oxophenarsine hydrochloride: average dose is 60 mg., minimum 50 mg. and maximum 70 mg., the variations being made to parallel variations in body weight.

Bismuth subsalicylate in oil: average dose is 0.2 Gm. of bismuth subsalicylate, the amount contained in 1½ cc. of the oily suspension.

Application of the Treatment Schedules.—The schedules in the accompanying table will satisfy the treatment requirements of the majority of patients suffering from the particular phase of syphilis for which they are recommended. There will be a small number of cases in which clinical response may be unsatisfactory, and in these the physician is justified in giving supplemental therapy (e. g., additional penicillin, or oxophenarsine hydrochloride and bismuth subsalicylate).

Recommended Treatment Schedule

Stage of Syphilis	Schedule
Primary, seronegative	A
Primary, seropositive	B
Secondary	C
Secondary, relapsing (except neurologic)	C and D
Latent (early)	A
Latent (late)	B
Tertiary, mucocutaneous	B
Tertiary, osseous	B
Tertiary, ocular	B
Tertiary, visceral	B
Tertiary, cardiovascular (all types)	B[4]
Tertiary, neurosyphilis	See bulletin[3]
Type undetermined	B
Congenital	B

6. *Toxic Reactions Due to Treatment.*—All precautions will be taken to assure that the drugs employed have not deteriorated, that they are properly prepared for injection and correctly administered. Prior to each injection, especially in the case of oxophenarsine hydrochloride, inquiry should be made as to the occurrence of any reaction following the previous injection. It is best to discontinue treatment with oxophenarsine hydrochloride in cases where any evidence of the previous occurrence of a reaction exists and to obtain expert advice before resuming such therapy. However, in combined schedules using penicillin and oxophenarsine hydrochloride, the penicillin may be continued.

A. Oxophenarsine Hydrochloride: Ordinarily, minor reactions, such as nausea, vomiting, diarrhea and headache, call for a reduction of the dose of oxophenarsine hydrochloride or its abandonment if the reaction is severe and continuous. Serious reactions, such as erythema of the ninth day (Milan's reaction), drug fever, drug eruptions, jaundice, blood dyscrasias, thrombopenic purpura, agranulocytosis, aplastic anemia) and neurologic reactions (hemorrhagic encephalopathy, peripheral neuritis) demand immediate and permanent discontinuance of oxophenarsine hydrochloride and prompt, active treatment of the reaction. In the more severe systemic reactions the following treatment measures are of value: intravenous administration of 5 per cent dextrose solution; high protein, high carbohydrate, low fat diet; supplemental vitamins, especially thiamine chloride and B complex; blood transfusions; a course of penicillin in agranulocytosis and aplastic anemia to ward off bacterial infection. In the type of reactions which may be fatal (encephalopathy, jaundice, exfoliative dermatitis and blood dyscrasias) the prompt use of BAL (2,3-dimercaptopropanol, British antilewisite) may be life-saving. The technic for the employment of this agent is described in another bulletin.[5] The subsequent treatment of the syphilitic infection should be decided on with the advice of the appropriate consultant.

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[4] To avoid possible dangerous therapeutic shock and paradox, treatment should not be initiated with the 50,000 unit dose; the patient should be given 5,000 units for three days (twenty-four doses) before the one hundred and twenty doses of 50,000 units are begun. However, where desired, the patient may be given bismuth subsalicylate in oil once weekly for four weeks prior to penicillin, in which case the 50,000 unit dose may be employed from the outset.

B. Bismuth Subsalicylate in Oil: Care in the administration of the drug will minimize the incidence of local reactions such as induration, abscess and arterial and venous embolism. Other reactions are exceedingly rare, except for stomatitis, the incidence of which can be reduced by careful attention to oral hygiene. When stomatitis occurs, bismuth should be discontinued and appropriate treatment of the oral cavity instituted.

C. Penicillin: The most common reaction is the Herxheimer (therapeutic shock), usually manifested by fever during the first twenty-four hours of treatment, and often accompanied by aggravation of the syphilitic lesions and such symptoms as headache, malaise, chilly sensations and weakness. This reaction may be considered a favorable one since it is ascribed to the abrupt, massive destruction of treponemes in the syphilitic lesions and in the blood stream. It is most frequently observed in primary and secondary syphilis. The Herxheimer reaction is not an indication for interruption or discontinuance of penicillin therapy. It subsides spontaneously, usually within the first twenty-four to thirty-six hours, in spite of continued treatment, and requires only symptomatic medication such as codeine or acetylsalicylic acid. Other reactions, less frequently observed, are mild or moderate secondary fever, occurring toward the end of treatment and terminating shortly after cessation of treatment, urticaria and other minor skin eruptions, generalized pruritus without eruption, herpes labialis [illegible] mild gastrointestinal symptoms. [illegible] be considered sufficient cause for interruption of treatment, with the possible exception of urticaria when severe, or angioneurotic edema involving the upper part of the respiratory tract. Injections of epinephrine or oral administration of "benadryl" (diphenhydramine hydrochloride) capsules (50 mg. each) or "pyribenzamine" (tripelennamine hydrochloride) tablets (50 mg. each) four or five times daily at three to four hour intervals, may assist in controlling the urticaria or angioneurotic edema until penicillin treatment has been completed. At times, substitution of another commercial brand of penicillin may provide relief.

7. *Post-Treatment Observation.*—Patients not eligible for outpatient care by the Veterans Administration should be referred, after discharge from the hospital, to the most competent local agency or individual for observation. The hospital physician should impress on the patient that regular and prolonged observation is absolutely essential for a final determination of cure. This is especially vital in primary and secondary syphilis but should be accomplished in all cases, whenever, practicable.

A. Clinical and Serologic Follow-Up: All patients should have a physical examination for evidences of clinical relapse and serologic test for syphilis (preferably quantitative) at monthly intervals during the first twelve months after completion of the treatment course and at two month intervals during the second twelve month period. Thereafter, examinations at intervals of six months for a period of five years will suffice in cases which are progressing favorably.

B. Spinal Fluid Examination: In all cases of primary and secondary syphilis that pursue a favorable course, a complete examination of the spinal fluid will be made as soon as possible after the completion of six months of follow-up. In all cases in which a clinical or serologic relapse occurs, and this is especially true of primary and secondary syphilis, examination of the spinal fluid will be carried out immediately, regardless of the time interval after treatment. In other types of syphilis than early syphilis, except neurosyphilis,[3] the initial diagnostic spinal fluid examination need not be repeated unless some specific indication arises.

8. *Clinical and Serologic Post-Treatment Course of Cases Which Respond Favorably.*—A. Primary and Secondary Syphilis: (1) Clinical course: The rate of healing of primary and secondary lesions varies. Chancres of small size, mucous patches and macular eruptions are ordinarily healed by the time the penicillin course is completed. Large ulcerated chancres, deeply infiltrated papular eruptions and large condylomata lata may not heal completely for one to three weeks after penicillin treatment is concluded.

(2) Serologic course: The serologic test for syphilis does not become negative immediately after completion of the penicillin course, the reverse being frequently true. Thus, seronegative primary cases often become seropositive, and seropositive cases often show a high titer of the quantitative test, immediately after completion of penicillin therapy. The titer of the serologic test declines gradually in the post-treatment period, the negative phase being attained in a variable period of time. The majority of cases become negative between the second and the fourth post-treatment months, although earlier and later reversals occur. In general, the higher the initial titer of the quantitative serologic test for syphilis the longer the test will require to become negative. Since lesions almost invariably heal following penicillin therapy, even in eventually unfavorable cases, the serologic course must be regarded as the most sensitive index of the progress of the case.

(3) Critical relapse period: The critical period for relapse, both clinical and serologic, appears to lie between the third and ninth post-treatment months, although relapses have occasionally been observed at earlier and later periods.

B. Latent Syphilis: (1) Clinical course: Since these patients have no discoverable lesions, no observations as to healing can be made.

(2) Serologic course: The serologic curve may take the same course as that observed in primary and

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[5] The Treatment of Poisoning by Arsenicals and Mercury with BAL, Veterans Administration Technical Bulletin (TB 10-9), May 20, 1946, para. 8.

secondary syphilis, especially in cases of extremely early latent syphilis which have recently passed from the secondary stage into the phase of latency. On the other hand, patients with latent syphilis of longer duration often exhibit serologic refractoriness, the serologic titer showing little or no tendency to decline, and they must eventually be classified as serum-fast. Such cases should not be retreated after having received the therapeutic course recommended in paragraph 5 herein, except in the event that there subsequently appears evidence of failure or progression as defined in paragraph 9 of this bulletin.

C. Tertiary Syphilis (Mucocutaneous, osseous, ocular and visceral): (1) Clinical course: Gummatous lesions usually heal rather promptly with penicillin, although extensive and deeply ulcerated lesions may not heal for several weeks after completion of the penicillin course. Similarly, osseous, ocular and visceral lesions may not respond completely for several weeks after completion of the course. The physician, with the advice of the appropriate specialist, must exercise judgment in deciding whether final response has been satisfactory or whether additional treatment is indicated.

(2) Serologic course: The pattern of serologic response is generally similar to that described for latent syphilis, a large proportion of the cases remaining serum-fast. Serologic response is, therefore, of little significance in determining outcome, the most important guide to success being the clinical course.

D. Tertiary, Cardiovascular (All Forms): (1) Clinical course: While treatment cannot be expected to reverse definitive pathologic changes in the cardiovascular system, it often results in considerable symptomatic improvement and may prolong life by stopping the progress of the lesion. The cardiologist should participate actively in the management of these patients.

(2) Serologic course: The response is similar to that described for latent syphilis, many cases remaining serum-fast. Clinical course is the important guide to progress and to the need for retreatment in these patients.

E. Tertiary Neurosyphilis (All Forms): The course is described in TB 10-26.[3]

F. Congenital: (1) Clinical course: Patients under the care of the Veterans Administration will be adults with congenital syphilis of long duration. When gummas are present they will respond as described in paragraph 8C (1). The response of interstitial keratitis is variable, seldom being rapid and complete, and adjuvant therapy with arsenic and bismuth compounds and hyperthermia may be necessary to produce a satisfactory outcome. The ophthalmologist should participate actively in the management of patients with interstitial keratitis.

(2) Serologic course: The serologic curve is similar to that described for latent syphilis, many cases remaining serum-fast.

9. *Definition of Treatment Failure.*—Great care should be exercised in the diagnosis of treatment failure, since patients may develop various intercurrent conditions of nonsyphilitic nature. Intercurrent infections, smallpox vaccination and other conditions may cause temporary reversal of the serologic test for syphilis from negative to weakly positive, or elevation of the titer of the quantitative serologic test (biologic false positive reaction). All forms of clinical relapse are generally preceded or accompanied by serologic relapse or by persistently high serologic titers. Treatment failures may be subdivided into the following categories:

A. Infectious Relapse: Mucous and/or cutaneous syphilitic lesions appear, particularly in the oropharynx and anogenital region. There may be lesions of the skin and mucous membranes or of either surface alone. Determined efforts should be made to demonstrate T. pallidum by dark field examination to make the diagnosis definite. If the dark field examinations are negative, repeated quantitative serologic tests for syphilis should be performed, which will reveal a progressively rising titer in the relapsing case or a persistently high titer without tendency to decline.

B. Serologic Relapse: Serologic relapse is manifested by a rising titer of the quantitative serologic values after the test has shown a previously falling trend, or by a reversal of the test from a negative state to a persistently positive state. The rise in titer or the change from negative to positive that often occurs during or soon after completion of penicillin treatment will not be construed as evidence of serologic relapse. When a serologic relapse is suspected, the patient should be thoroughly and frequently examined, for serologic relapse is usually accompanied or followed at a brief interval by infectious or some other form of clinical relapse. Since the titer of the quantitative serologic tests for syphilis may vary from time to time as a result of laboratory technic, it is not sufficient to accept minor fluctuations in the titer as evidence of serologic relapse. Serologic relapse should be diagnosed only when a series of consecutive tests, performed preferably in the same laboratory, show persistently increasing titers over a period of three to four weeks. In the event that a titered test cannot be performed, a change from a doubtful or negative reaction to a persistently positive reaction will be accepted as adequate evidence of serologic relapse.

C. Serum-Fastness: Serum-fastness in primary and secondary syphilis is manifested by a failure of the quantitative serologic tests for syphilis to show a marked decline within an arbitrary period of six months after completion of therapy. Minor fluctuations in the titer may be observed, and also a drop to a lower sustained level, but no consistent, gradual and maintained fall to negative occurs. This condition will be uncommon in primary and secondary syphilis but when it occurs should be managed as a treatment failure. It will be more common in latent, tertiary and congenital syphilis but will not be considered adequate reason for retreatment without clinical evidence of failure.

D. Neurologic Relapse (Neurorecurrence): The most common form of neurologic relapse is symptomatic neurosyphilis, manifested by an abnormal spinal fluid without other clinical evidence of disease. Neurologic relapse may also occur as acute syphilitic meningitis with headache, dizzy spells, fever and rigidity of the neck. In fulminant cases coma may supervene fairly rapidly. Less commonly, a neurologic relapse may appear as an isolated cranial nerve palsy or as paralysis of one or more extremities. Diagnosis should be confirmed by spinal fluid examination, and the neurologist should be consulted for diagnostic assistance.

E. Ocular Relapse: Ocular relapse may occur as iritis, usually unilateral, or optic neuritis or neuroretinitis, which may be unilateral or bilateral. The latter two conditions may be accompanied by headache, with blurring and progressive failure of vision. In these cases the ophthalmologist should be consulted for diagnostic assistance.

F. Osseous Relapse. Osseous relapse is manifested by severe pain, often nocturnal, in the long bones, most often the tibias, or by severe headache when the cranial bones are affected. Local tenderness over affected bones is often very acute. Roentgenograms may assist in the diagnosis.

G. Treatment-Resistance: Failure of the lesions to heal and the continued presence of living treponemes will be observed with extreme rarity in early syphilis after completion of penicillin therapy. The slower response of some large chancres and other early syphilitic lesions will not be construed as treatment-resistance, unless dark field examination reveals the continued presence of living treponemes. In such cases the possibility that the residual lesion is nonsyphilitic must be considered (e. g., the penile ulcer may have a chancroidal component, the generalized eruption may not be a secondary syphiloderm, or the condylomas may be acuminate [venereal warts]).

H. Visceral Relapse: Hepatitis with jaundice and other forms of visceral relapse have not thus far been recorded after penicillin therapy, but the physician should watch for their occurrence.

10. *Management of Treatment Failures.*—A. The management of neurologic relapse is discussed in another bulletin.[3]

B. All other forms of treatment failure will be treated by schedule C, followed by schedule D. If schedule D has not been completed prior to discharge from the hospital, the patient will be referred to the appropriate agency or individual for its completion.

C. Cases that fail to respond satisfactorily to retreatment by schedules C and D, as described in the preceding paragraph, require expert advice as to further management.

11. *Administrative Management.*—A. Personnel: It is recommended that the physician in each Veterans Administration hospital who is most interested and experienced in this field be assigned complete responsibility for the management of all patients with syphilis. He will generally be a member of the medical service, except in neuropsychiatric hospitals. The appropriate specialist, especially the neuropsychiatrist, ophthalmologist and internist, should be called on to cooperate with him in the management of patients having parenchymatous involvement.

B. Consultation: Expert advice, not available locally, may be required in the management of certain cases. The branch office should be called on to furnish consultative services under those circumstances.

Concentrated Antibodies.—Gamma globulin is that fraction of the plasma proteins which contains the immune bodies. Recent preparations of this material contain antibodies which are concentrated approximately twenty-five fold over the pooled plasma from which they are derived.—Berenberg, William: Gamma Globulin as a Prophylactic and Therapeutic Agent in Communicable Disease, *Milbank Memorial Fund Quarterly,* April 1947.

DIPHTHERIA MORTALITY IN LARGE CITIES IN THE UNITED STATES IN 1946

TWENTY-SECOND REPORT

The procedure followed in obtaining data for this report is described in the review of typhoid mortality for the same cities.[1] A communication was addressed to the health officer of each of the cities requesting the number of deaths from diphtheria both among residents and among nonresidents reported in 1946. Comment was also sought on any special outbreak of diphtheria or change in age incidence; also any special program to secure the protection of children against this disease. In calculating death rates the 1940 census figures were used. Footnotes indicate corrections in rates for those cities for which the Bureau of the Census has prepared official estimates for years subsequent to 1940.

The practice of charging all deaths, both among residents and among nonresidents, against the individual city has been continued, with the inclusion of appropriate symbols similar to those employed in previous years. Such symbols indicate those cities in which either (1) all diphtheria deaths were stated to be in nonresidents or (2) one third or more of such deaths were stated to be in nonresidents. Attention is directed to table 11, which lists thirty-one cities that record no diphtheria deaths among residents in 1946. In ten additional cities (Akron, Charlotte, Cincinnati, Flint, Memphis, New Haven, Portland, Providence, Springfield, Tacoma) it is stated that all diphtheria deaths in 1946 were among nonresidents. In addition to the twenty-seven cities (table 12) with no diphtheria and typhoid deaths in 1946, seven cities (Akron, Charlotte, Flint, Memphis, New Haven, Providence, Springfield) report no deaths among residents from either cause.

The fourteen New England cities (table 1) (population 2,579,152) not only have failed during the past six years to equal the low point of six deaths in 1940 (eleven in 1941, eleven in 1942, twelve in 1943, nine in 1944, eight in 1945) but had more than four times the number of deaths for the preceding year (thirty-six in 1946). The death rate for the group as a whole has increased from 0.23 in 1940 to 1.40 in 1946 (0.43 in 1941 and 1942; 0.47 in 1943; 0.35 in 1944; 0.31 in 1945) and these cities find themselves in sixth place, the death rate being higher only in the Mountain and Pacific group (1.70) and the South Atlantic cities (1.68). Although the increase in number of deaths is evident in several cities (Cambridge, Hartford, Lowell, Somerville, Worcester), the most striking increase occurred in Boston, where there were recorded twenty-two deaths, twelve among nonresidents. The health commissioner states that the increase in resident deaths is part of the "nationwide diphtheria increase without any unusual death rate." The fact remains that deaths among residents in Boston have increased from one each in 1942 and 1943 to two in 1944, three in 1945 and ten in 1946. It is further stated that the large number of deaths among nonresidents (twelve in

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The preceding articles were published in The Journal Sept. 20, 1924, p. 918; April 25, 1925, p. 1269; April 3, 1926, p. 1005; April 30, 1927, p. 1396; May 19, 1928, p. 1621; May 25, 1929, p. 1759; June 7, 1930, p. 1838; May 23, 1931, p. 1768; May 7, 1932, p. 1644; May 20, 1933, p. 1595; May 26, 1934, p. 1758; June 15, 1935, p. 2182; June 13, 1936, p. 2060; June 26, 1937, p. 2200; Aug. 6, 1938, p. 524; May 20, 1939, p. 2043; May 11, 1940, p. 1875; Feb. 28, 1942, p. 714; Aug. 29, 1942, p. 1503; Aug. 14, 1943, p. 1079, and July 27, 1946, p. 1053.

[1] Typhoid in the Large Cities of the United States in 1946, J. A. M. A. **134**: 1086 (July 26) 1947.

1946) is due to the liberal policy with regard to hospitalizing cases from nearby communities Only five cities (Bridgeport, Fall River, Lynn, New Bedford, Waterbury) record no death (there were nine in 1945 and 1944, eight in 1943, nine in 1942). It is stated that in three cities (New Haven, Providence, Springfield) the one death was among nonresidents Of thirty-six deaths in this group of cities, seventeen were among nonresidents (twelve in Boston, two in Hartford, one each in New Haven, Providence and Springfield) It is stated that there has occurred no death from diphtheria in Lynn for ten years (a record equaled only by Elizabeth), none in Waterbury for eight years, none in Bridgeport for seven years Following a period of six years without a death, Worcester records two among residents New Haven reports no death among residents for eight years Lynn reports no diphtheria or typhoid death during the past ten years, Bridgeport none for five years, Fall River none for four years, Waterbury none for three years

TABLE 1—*Death Rates of Fourteen Cities in New England States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1946	1945	1941 1945	1935 1939	1930 1934	1925 1929	1920 1924	1915 1919	1910 1914	1905 1909	1900 1904	1895 1899	1890 1894
Lynn	0.0	0.0	0.0	0.4	4.7	11.5	17.0	17.8	17.2	21.7	38.0	44.0	43.0
Bridgeport	0.0	0.0	0.0	0.8	1.2	11.5	11.6	24.4	23.3	18.8	42	63.9	79.3
Waterbury	0.0	0.0	0.0	1.4	2.4	2.6	17.9	20.0	20.0				..
Fall River	0.0	0.0	0.9	2.4	6	12.0	25.5	31.0	21.0	21.1	50.1	41.8	46.9
New Bedford	0.0	0.9	0.5	0.4	5.0	10.9	16.5	17.0	29.9	32.6	25.1	5.6	20.0
Providence	0.4*	0.4	0.9†	0.6†	3.1	9.5	15.8	29	28	10.7	41.2	35	53.3
New Haven	0.0*	0.0	0.1*	0.4*	0.7†	16	7.1	14.2	11.9	22.7	15.6	34.8	74.5
Springfield	0.7*	0.7	0.4	0.5*	2.1	10.3	15.4	24.0	19.1	12	29.6	1.3	68.2
Cambridge	0.9	0.0	0.4	0.2	1.2	2	8.9	12.9	28.8	25.3	46.7	71.9	58.0
Worcester	1.0	0.0	0.0	0.7†	1†	8.6	15.5	14.1	31.3	32	16.5	50.3	47.8
Hartford	1.8†	0.6*	0.3†	1.9†	1.1†	7.3	11.9	11.8	25.3	28.1	8.8	47.8	120.9
Lowell	2.0	0.0	0.8	2.8	9.4	10.6	16.7	25	29.6	31.0	9.3	44.3	56.4
Somerville	2.9	0.0	0.2	0.4	9.3	7	19.7	20.5	21.4	21.5	40.5	7.8	37.4
Boston	2.9†	0.5	0.4†	0.7†	3.2†	8	10.2	2	30.0	2.2	53.7	83.9	112.2

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents

TABLE 2—*Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1946	1945	1941 1945	1935 1939	1930 1934	1925 1929	1920 1924	1915 1919	1910 1914	1905 1909	1900 1904	1895 1899	1890 1894
Syracuse	0.0	0.0	0.0	0.4†	0.4†	9.0	22.9	12.9	16.6	17.4	17.7	31.1	55.4
Yonkers	0.0	0.0	0.0	0.3	0.6	10.4	17.0	17.7	25				
Elizabeth	0.0	0.0	0.0	0.5†	4.5	11.2	19.2	11.1	14.8	31.7	49.4	69.5	79.3
Newark	0.0	0.0	0.1	0.2	0	14.5	9.7	14.6	23.3	30.1	46.7	79.1	110.4
Paterson	0.0	0.0	0.1	0.9	6.3	9.1	18.5	15	16.1	25.5	51.9	111.8	145.4
Utica	0.0	0.0	0.2	0.0	1.2	14#							
Reading	0.0	0.0	0.2	2.5	6	7	21.1	16.9	55.7	29.2	70.1	72.0	94.1
Albany	0.0	0.0	0.3*	0.2*	3.0	7.5	12.8	10.4	20.0	31.6	26.9		
Trenton	0.0	0.0	0.5	0.8	2.7	4.4	7.3	8.8	12.8	15.8	23.6	92.7‖	89.7‖
Jersey City	0.0	0	0.5	2.4	6.0	11.5	18.4	21.0	23.2	32.6	57.9	85.4	108.6
Erie	0.0	0.9	0.3	0.0	4.0	5.8	16.5	15.1	17.7	27.1	42.3	23.1	
New York	0.2	0.2†	0.1	0.6	2.2	10.7	14.0	21.8	28.0	40.0	58.0	85.8	131.4
Rochester	0	0.0	0.1*	0.0	0.7	7.5	16.9	12.7	29.1	24	52.3	45.9	96.6
Philadelphia	0	0.1	0.1	0.5	1.3	11.8	16.7	22.7	24.6	31.1	50.0	100.6	119.4
Scranton	0.7	0.0	0.4†	0.7	1.7	11.7	12	22.1	2.4			77.8‖	48.1‖
Pittsburgh	0.7†	0.4†	0.5	1	5.1	11.5	30.1	22.3	29.3	20.4	56.9	32.9	86.4
Camden	5†	0.0	1.5†	3.7	8.1†	21.9	20	23.2	38.8	48.9	52.6	93.8	194.0
Buffalo	8	0.5	0	0.8†	4.9	9.1	24.0	27	22.0	18.4	24.8	53.5	60.9

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents
‖ Diphtheria deaths from Chapin s Municipal Sanitation
# Incomplete data

TABLE 3—*Death Rates of Ten Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1946	1945	1941 1945	1935 1939	1930 1934	1925 1929	1920 1924	1915 1919	1910 1914	1905 1909	1900 1904	1895 1899	1890 1894
	0.0	0.0	0.3†	1.7†	3.5†	6.9	9.8	5.8	7.0	9.8	24.4	17.6	59.7
	0.6‡	0.3*¶	0.2†	2.8	3.7	7.1	10.5	11.9	6.9	11.2	23.5	50.9	77.9
	0.7¶	0.0	0.7†¶	2.4	4.6	4.1	4.5	4.1	6.7	17.0			
	1.0†	0.7*	1.6†	4.6†	5.9†	7.0	13	10.1	12.5	14.2	11.1	10.5	8.8
	1.0*	0.0*	2.4†	6.0†	4.1								
	1.1	2.3	2.1	2.4	5.5	6.0#						.	
	1.2†	0.6	0.5	2.2†	3.5	5.4#				..	. .		.
	2.7	1.8†	0.5†	1.6	6.2	10.9	11.6	15.2	18.0	24.8	59.9	84.9	83.8
	1†‖	2.9‖	1.2‖	1.0†	1.7	7.6	11.1	15	14.2	16.1	30	68.1	70.0
	3.7	2.8	2.4†	5.1†	4.0	4.6	5	#					

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents
# Incomplete data
‖ 1943 special census gives rate of 2.7 for 1945 and 2.9† for 1946 and 1.1 for 1941 1945 for Baltimore
¶ 1944 special census gives rate of 0.4 for 1946 and 0.5 for 1941 1945 for Norfolk and rate of 0.2 for 1945 for Washington
‡ 1946 special census gives rate of 0.5 for 1946 for Washington

The eighteen cities (population 13,129,185) in the Middle Atlantic states (table 2) continue to hold first place The group rate of 0.38 is nearly double that of 1945 (0.20) and significantly higher than that of 1944 (0.11), when these cities set an all time low for any group In 1944 there were but fifteen deaths, five among nonresidents In 1946 there were fifty deaths nine among nonresidents Thus the number and but two for diphtheria. For nine years South Bend has reported but one typhoid death (one among nonresidents in 1944) and but two for diphtheria. Chicago reports an increase from three deaths in 1945 to thirteen in 1946, all among residents (in 1943 there were fifty-three deaths). Detroit records a striking reduction in diphtheria deaths from twenty-one (sixteen among residents) in 1945 to four (two among residents) in 1946. Cincinnati for the first time reports no death among residents (three among nonresidents) Cleveland records but one death (there were six in 1945). The number of deaths in Columbus has decreased from twelve in 1945 to six in 1946 (there were none in 1941). Deaths in Indianapolis have decreased from eleven in 1945 (nine among residents) to eight in 1946 (four among residents). Milwaukee reports three deaths and Toledo two, all among residents.

TABLE 9.—*Three Cities with Highest Diphtheria Rate for 1946*

Evansville	8.2
Duluth	6.9†
Knoxville	5.4†

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

TABLE 10.—*Twenty-Two * Cities with No Diphtheria Deaths in 1945 and 1946*

Albany 5
Bridgeport 7
Canton 8
Des Moines 3
Elizabeth 10
Fall River 4
Fort Wayne
Gary 5
Grand Rapids 9
Lynn 10
Newark 3
Paterson 5
Peoria 5
Reading 4
Richmond 4
South Bend
Syracuse 7
Trenton 3
Utica 5
Waterbury 8
Wichita 4
Yonkers 9

3 No diphtheria death in three years.
4 No diphtheria death in four years.
5 No diphtheria death in five years.
7 No diphtheria death in seven years.
8 No diphtheria death in eight years.
9 No diphtheria death in nine years.
10 No diphtheria death in ten years.
* Twenty-one without Gary.

TABLE 11.—*Thirty-One # Cities with No Diphtheria Deaths in 1946*

Albany
Bridgeport
Canton
Chattanooga
Dallas
Des Moines
Elizabeth
Erie
Fall River
Fort Wayne
Fort Worth
Gary
Grand Rapids
Jersey City
Long Beach
Lynn
Nashville
New Bedford
Newark
Paterson
Peoria
Reading
Richmond
South Bend
Spokane
Syracuse
Trenton
Utica
Waterbury
Wichita
Yonkers

Thirty without Gary.

The cities in the East South Central States (table 5) *(population 1,286,747) report* a considerable decrease in diphtheria deaths, both among residents and nonresidents. In 1946 in this group of cities there were thirteen deaths with nine among nonresidents (in 1945 there occurred forty-one deaths, twenty-five among nonresidents). In 1943 this group reported a low of eight deaths, only two of which were among residents. The group rate decreased from 3.18 in 1945 to 1.01 in 1946 (the low was 0.62 in 1943). In contrast to 1945, when this was the highest of all groups, in 1946 these cities are in third place. Two cities (Chattanooga, Nashville) appear on the honor roll (table 11) with no diphtheria deaths. Memphis records no death among residents for two years. Three other cities (Birmingham, Knoxville, Louisville) record one third or more deaths among nonresidents (one of two in Birmingham, four of six in Knoxville, two of three in Louisville). Chattanooga and Nashville also report no typhoid death in 1946, but the health officer of Chattanooga states that deaths among nonresidents are not coded.

The nine cities in the West North Central states (table 6) (population 2,716,484) after maintaining a fairly consistent rate for four years show a definitely higher rate (1.29 in 1946; 0.66 in 1945). The number of deaths has increased from eighteen (ten among residents) in 1945 to thirty-five (twenty-eight among residents) in 1946. The low point occurred in 1941 with a rate of 0.18 and five deaths (four among residents). Only two cities (Des Moines, Wichita) are on the 1946 honor roll (there were four in 1945). Wichita records no death from typhoid or diphtheria for four years, Des Moines none for three years.

TABLE 12.—*Twenty-Seven * Cities with No Diphtheria and Typhoid Deaths in 1946*

Albany 5
Bridgeport 5
Canton 7
Chattanooga
Des Moines 3
Elizabeth 2
Erie
Fall River 4
Fort Wayne 2
Gary 5
Grand Rapids 7
Jersey City
Long Beach
Lynn 10
Nashville
New Bedford
Newark
Paterson 5
Peoria 3
Reading 4
Richmond
South Bend 2
Syracuse 2
Trenton 3
Waterbury 3
Wichita 4
Yonkers 8

2 No diphtheria or typhoid deaths in two years.
3 No diphtheria or typhoid death in three years.
4 No diphtheria or typhoid deaths in four years.
5 No diphtheria or typhoid deaths in five years.
7 No diphtheria or typhoid deaths in seven years.
8 No diphtheria or typhoid deaths in eight years.
10 No diphtheria or typhoid deaths in ten years.
* Twenty-six without Gary.

TABLE 13.—*Ten * Cities in Which All Diphtheria Deaths in 1946 Were Stated to Be in Nonresidents*

Akron 2
Charlotte 4
Cincinnati
Flint 4
Memphis 2
New Haven 8
Portland
Providence
Springfield
Tacoma

2 All deaths among nonresidents for two years.
4 All deaths among nonresidents for four years.
8 All deaths among nonresidents for eight years.
* Nine without Charlotte.

TABLE 14.—*Number of Cities with Various Diphtheria Death Rates*

	No. of Cities	40 and Over	20 and Over	10 and Over	5 and Over	Under 5	0.0
1890-1894	64	52	60	61	62	2	0
1895-1899	66	34	53	63	65	1	0
1900-1904	68	22	46	61	66	2	0
1905-1909	72	3	43	66	71	1	0
1910-1914	79	1	36	63	78	1	0
1915-1919	84	0	25	62	81	3	0
1920-1924	88	0	14	65	86	2	0
1925-1929	92	0	1	22	67	25	0
1930-1934	93	0	0	0	24	69	0
1935	93	0	0	2	17	76	19
1936	93	0	0	0	5	69	19
1937	93	0	0	0	3	70	20
1938	93	0	0	0	3	66	24
1939	93	0	0	0	2	59	32
1940*	93	0	0	0	0	53	40
1941*	93	0	0	0	1	53	39
1942*	93	0	0	0	1	59	33
1945*	93	0	0	1	2	54	36
1946*	93	0	0	0	3	60	30

* Charlotte, Gary and Sacramento omitted.

Following a period of ten years with only two diphtheria deaths, Duluth reports seven in 1946, four among residents. Of the nine deaths recorded during the period 1943-1946 only two have occurred among pre-school children or infants. The health officer is impressed with the relatively short duration of artificial protection. With no death among residents in 1945, St. Louis reports four such deaths in 1946. The health commissioner notes a definite increase in incidence of diphtheria. Minneapolis records nine deaths, seven among residents, in contrast to three, all among residents, in 1945 and no deaths in 1942. St. Paul reports three deaths and Omaha two, all among residents. In 1945 there were no deaths in these cities.

TABLE 15.—*Total Diphtheria Death Rates for Eighty-Eight Cities, 1923-1946* *

	Population	Diphtheria Deaths	Diphtheria Death Rate per 100,000 of Population
1923	31,060,848	4,078†	13.13
1924	31,722,841	3,439	10.84
1925	32,384,834	3,133	9.67
1926	33,016,827	3,106	9.40
1927	33,708,820	3,493	10.36
1928	34,370,813	3,176	9.24
1929	35,032,806	2,738	7.82
1930	35,719,180	1,827	5.12
1931	35,821,890	1,366	3.81
1932	35,910,317	1,191	3.32
1933	36,032,205	861	2.38
1934	36,160,434	821	2.27
1935	36,348,921	771	2.12
1936	36,549,325	551	1.51
1937	36,751,422	571	1.55
1938	36,956,409	467	1.26
1939	37,160,779	326	0.88
1940	37,309,215	225	0.60
1941	37,309,215††	209	0.56
1942	37,309,215††	256	0.69
1943	37,309,215††	288	0.77
1944	37,309,215††	252	0.68
1945	37,309,215††	311	0.83
1946	37,309,215††	329	0.88
Rates for Ninety-Three Cities			
1935	37,025,179	789	2.13
1936	37,241,414	567	1.52
1937	37,459,239	583	1.55
1938	37,680,155	477	1.26
1939	37,900,851	330	0.87
1940	38,060,662	229	0.60
1941	38,060,662††	213	0.56
1942	38,060,662††	259	0.68
1943	38,060,662††	293	0.77
1944	38,060,662††	263	0.69
1945	38,060,662††	321	0.84
1946	38,060,662††	334	0.88

* Five cities (Jacksonville, Miami, Oklahoma City, South Bend and Utica) are omitted from this summary because data for the full period are not available.

† Data for Fort Worth lacking.

†† 1940 census figures used.

The eight cities of the West South Central states (table 7) (population 2,048,692) report twenty-seven deaths, eighteen among residents (there were fifty-one deaths in 1945, thirty-three among residents). This constitutes the lowest number of deaths for this group of cities, the previous low being thirty-four deaths in 1941 (rate 1.66). The group rate decreased from 2.48 in 1945 to 1.32 in 1946. Dallas and Fort Worth appear on the honor roll for the first time. In 1942 there were three deaths in Fort Worth and in 1944 three in Dallas, all among nonresidents. However, in 1946 these cities report no deaths among either nonresidents or residents. In New Orleans it is stated that of twelve deaths seven occurred among nonresidents. Two cities (there were four in 1945) report rates in excess of 2.0 (New Orleans, San Antonio). Houston reports five deaths, four among residents. San Antonio records seven deaths, six among residents. It is stated that the one death each in El Paso, Oklahoma City and Tulsa was among residents.

In 1940 Sacramento was added to the eleven cities included in the Mountain and Pacific group (table 8). The figures for this city have been omitted in the tables for group comparison. The original cities (population 4,186,039) report substantially the same number of deaths as in 1942 and 1945 (seventy-one in 1946, seventy-three in 1942 and 1945). This is larger than the number of deaths (thirty-nine) in 1941. The rate has increased from 0.93 in 1941 to 1.70 in 1946, and this is the highest group rate for the latter year (table 16). Of the seventy-one deaths in 1946 fifty-two were among residents (forty-seven among seventy-three in 1945). Long Beach, with no typhoid or diphtheria death in 1946, is the only city on the honor roll. It is stated that the two diphtheria deaths in Portland and the one in Tacoma were among nonresidents. Two other cities (Oakland, San Diego) record one third or more deaths among nonresidents (two of six in Oakland, one of three in San Diego). Five cities (Denver, Oakland, Sacramento, San Francisco, Seattle) report rates in excess of 2.0. Adjusted to a 1945 census, the San Francisco rate is 1.5 (fifteen deaths, eleven among residents). Adjusted to a 1946 census, the Oakland rate is 1.5 (six deaths, four among residents). Denver reports seven deaths, all among residents. Los Angeles records twenty-seven deaths, twenty among residents. Sacramento reports four deaths, three among residents.

Of the entire ninety-three cities there was none (one in 1945) with a rate in excess of 10.0 and three (Evansville, Duluth, Knoxville) with rates in excess of 5.0 (table 14). The number of cities with no deaths from diphtheria has decreased from thirty-six in 1945 to thirty in 1946. The largest number (forty) of cities found in this group was in 1940. The number of cities with rates below 5.0 is sixty (fifty-four in 1945). For the eighty-eight cities (table 15) for which data are available since 1923 there occurred three hundred and twenty-nine deaths from diphtheria in 1946 (more than for any single year since 1938). The rate, however, for this group of cities remains for the eighth consecutive year less than 1.0. The rate for the ninety-three cities (0.88) is the same as that for the eighty-eight

TABLE 16.—*Total Diphtheria Death Rates per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

	Population *	Diphtheria Deaths		Diphtheria Death Rates			
		1946	1945	1946	1941-1945	1935-1939	1930-1934
New England	2,579,152	36	8	1.40†	0.39	0.85	3.38
Middle Atlantic	13,129,185	50	26	0.38	0.19	0.65	2.50
South Atlantic	2,727,985	46	39	1.68	0.95	2.18	3.54
East North Central	9,386,378	56	65	0.60	0.73	1.82	3.66
East South Central	1,286,747	13	41	1.01†	1.50	3.37	6.36
West North Central	2,716,484	35	18	1.29	0.54	1.33	3.22
West South Central	2,048,692	27	51	1.32	2.14	3.85	6.55
Mountain and Pacific	4,186,039	71	73	1.70	1.46	1.71	2.69

* 1940 census figures used.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

cities. The actual number of deaths has increased by one hundred and twenty-one over the low of 1941. The most impressive increase has occurred in the New England cities, while the most definite decrease is reported for the East South Central group. The hospitalization of cases from surrounding suburban and rural areas continues to influence the picture. There is a slight tendency for diphtheria to become relatively more prevalent among the higher age groups. Infants and preschool children should receive their protective treatments, and protective boosters should be given at time of school admission and later in life when conditions indicate that it is desirable. Diphtheria can be eliminated only if administrative and educational programs are adjusted to changing circumstances.

Clinical Notes, Suggestions and New Instruments

SUCCESSFUL DESENSITIZATION IN PENICILLIN SENSITIVITY

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Penicillin is finding increasingly wide use in present day medical practice. The clinical indications for its use were at first almost exclusively imperative and urgent. However, at present it is used in preference to other available forms of treatment in many mild infections, and its administration has become an almost routine postoperative precaution. As a result, the reported incidence of reaction to penicillin has increased. These reactions are for the most part allergic, and in many instances they are of such severity as to preclude or limit further use of the drug.

The case reported here illustrates the clinical problem which arises when resumption of penicillin therapy becomes necessary or a person who previously exhibited such an allergic reaction.

The reactions to penicillin in our clinical material have fallen into four groups:

Group 1: Reactions similar to those seen in other cases of drug sensitization and often characteristic of serum sickness. Closely allied to this group are the various toxic erythemas and the severe local reactions after the administration of penicillin in beeswax and peanut oil.

Group 2: Reactions following local application of the drug, falling into the category of allergic contact dermatitis.

Group 3: The erythematovesicular eruptions which often are initiated on, and may remain limited to, the hands, feet and groin, at the sites of previous fungous infection.[1] Further administration of the drug may cause dissemination of the lesions. This type of reaction can be explained by the fact that the fungi commonly responsible for dermatomycosis in these areas are capable of producing penicillin.[2] It is probable that these patients have become sensitized to penicillin in this manner.

Group 4: Febrile reactions, usually unaccompanied by cutaneous manifestations, following aerosol inhalation or bronchial instillation of penicillin. This form of reaction may ultimately be classified with group 1.

In our experience, immediate reactions to penicillin skin tests have been negative. The presence of a delayed positive test of the forty-eight hour type has usually been of clinical significance.

REPORT OF CASE

A white man aged 63, with acute respiratory distress of two days' duration, was readmitted to the nose and throat service of the Mount Sinai Hospital on July 29, 1946. He had been hospitalized in 1941 for pachydermia laryngis, which had been treated by tracheotomy and radiotherapy.

Examination revealed espiratory stridor with decided supraclavicular and infraclavicular retraction. Direct laryngoscopic examination revealed intense edema and redness of the arytenoids, aryepiglottic folds and epiglottis. The vocal cords could not be visualized. The remainder of the physical examination was irrelevant. Results of examination of the blood and urinalysis were within normal limits. Roentgen examination of the neck was negative.

An emergency tracheotomy was performed on admission. Penicillin therapy was immediately started with an initial dose of 100,000 units followed by 30,000 units every three hours intramuscularly. The total daily dosage of penicillin was 220,000 units the first day and 240,000 units the second and third days. On the fourth day only three injections totaling 90,000 units could be given, because the patient developed an acute erythematovesicular eruption on the hands, feet and groin. The eruption rapidly spread to involve the entire body. The skin on the body showed a scarlatiniform type of eruption with edema of the face. There were some vesicles on the forearms. The eruption gradually subsided, but desquamation of the hands and feet was still evident one month later. There was no previous history of penicillin therapy, nor could a personal or a family history of allergic disease be elicited.

Following tracheotomy, laryngoscopic examination disclosed the presence of a mass involving the right arytenoid and ventricle. On biopsy this proved to be an infiltrating, cornifying squamous cell carcinoma. Further radiation therapy was considered inadvisable, and laryngectomy was recommended.

On Sept. 5, 1946 the patient was tested intradermally with 2,000 units of noncrystalline commercial penicillin in 0.1 cc. of isotonic solution of sodium chloride. At the twenty-four to forty-eight hour reading there was a 4 plus reaction consisting of an area of induration and vesicles 2 cm. in diameter. Fifty units of the same brand of penicillin were injected intradermally at another site and induced an area of pronounced erythema 0.5 cm. in diameter after forty-eight hours. The trichophytin test in a 1:30 dilution was also strongly positive.

A laryngectomy was performed. In view of the previous eruption after the administration of penicillin and the positive skin test, penicillin therapy was withheld and prophylactic sulfadiazine therapy was substituted. In spite of this, sloughing occurred at the site of the tracheotomy. The suture line sloughed completely and despite further treatment with sulfadiazine infection of the wound continued with delay in healing. Further repairs were likewise unsuccessful.

The forty-eight hour intradermal test with 2,000 units of crystalline penicillin in 0.1 cc. of isotonic solution of sodium chloride was positive on Oct. 16, 1946. Nevertheless, because of the patient's unfavorable course it was deemed highly desirable to use penicillin if at all possible. Therefore it was decided to attempt desensitization to penicillin.

When desensitization was started on Dec. 5, 1946 a preliminary skin test with crystalline penicillin, 2,000 units in 0.1 cc. of isotonic solution of sodium chloride, again yielded a 4 plus reaction after forty-eight hours. Even 80 units injected intradermally elicited vesiculation and scaling in forty-eight hours.

The technic for desensitization consisted in subcutaneous injections of penicillin three times a week in gradually ascending doses. The first injection contained 400 units of noncrystalline

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From the dermatologic and medical services of the Mount Sinai Hospital.

This work has been aided by a grant from the Lederle Laboratories, Inc.

[1] Graves, W.; Carpenter, C., and Unangst, R.: Recurrent Vesicular Eruptions Appearing During Administration of Penicillin, Arch. Dermat. & Syph. 50: 6 (July) 1944. Cormia, F.; Jacobson, L., and Smith, E.: Reactions to Penicillin, Bull. U. S. Army M. Dept. 4: 694 (Dec.) 1945.

[2] Peck, S. M., and Hewitt, W. L.: The Production of an Antibiotic Substance Similar to Penicillin by Pathogenic Fungi (Dermatophytes), Pub. Health Rep. 60: 148-153 (Feb. 9) 1945.

penicillin. Each subsequent dose was doubled, so that 12,800 units were injected at the end of the second week. The increments were smaller thereafter, until 20,000 units were given as a maximum single injection. From Dec. 5, 1946 to Dec. 28, 1946 a total of twelve desensitizing injections were administered.

On Dec. 31, 1946 a skin test with 2,000 units of crystalline penicillin in 0.1 cc. of isotonic solution of sodium chloride produced only a pinhead-sized papule in forty-eight hours. The trichophytin test, done simultaneously, still produced a strong positive reaction.

It was then decided to administer single preliminary, provocative, intramuscular injections of penicillin before routine therapy with the antibiotic was initiated. Therefore on Jan. 2, 1947 the patient was given 5,000 units of commercial penicillin intramuscularly; again six hours later 10,000 units were administered without untoward reaction. The following day he was given a single dose of 30,000 units, which he tolerated well.

On Jan. 5, 1947 routine doses of 30,000 units of penicillin were started every three hours. After the fourth injection there was a cutaneous reaction involving the groin and gluteal regions. It consisted of sharply circumscribed erythema and edema. This reaction was thought to result from too rapid an increase in the dosage of penicillin. Therefore, penicillin therapy was suspended for twenty-four hours. Administration of the drug was then resumed on a reduced schedule of 10,000 units every three hours. After forty-eight hours the dosage was increased to 15,000 units, and it was again increased after two days to 20,000 units every three hours. This dosage was continued for the next four days and then increased to 30,000 units every three hours. This was continued for seventeen days without any adverse reaction. The eruption on the groin and buttocks faded gradually.

On Jan. 29, 1947, twenty-seven days after the first negative skin test, the patient was retested with both crystalline and commercial penicillin, 2,000 units in 0.1 cc. of isotonic solution of sodium chloride. There was again a negative cutaneous reaction to each preparation.

With the successful administration of penicillin following desensitization, wound healing began and continued satisfactorily.

SUMMARY

In a white man aged 63 there developed an erythematovesicular eruption after the parenteral administration of penicillin. This first appeared on the hands, feet and groin, and it rapidly became generalized.

The presence of a positive delayed skin test to penicillin and the re-elicitation of the eruption on subsequent use of the drug, indicate that the first eruption was due to penicillin sensitivity.

Successful desensitization, which permitted the administration of penicillin in effective dosage, is described.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report.

HOWARD A. CARTER, *Secretary.*

BRANDT INFRA-RED LAMPS ACCEPTABLE

Manufacturer: M. Brandt & Sons, 58 East 181st Street, Bronx 53, New York.

The Brandt Infra-Red Lamps are for administering radiant heat. Model No. 332 stands on a 12 inch (30 cm.) floor base. The main upright rises 29 inches (74 cm.), and into it telescopes an additional upright about 25 inches (64 cm.) in length. The latter section bears an arm, which is 16 inches (41 cm.) in length, can be adjusted to various angles and lengths, and carries the lamp. It is therefore possible to set the lamp at any height above the floor up to about 70 inches (180 cm.). Models Nos. 536, 538, 532, 980 and 951 are with variation comparable to Model No. 332.

The heating unit of Model No. 332 draws 550 watts, is well housed, and is backed by a 12 inch reflector. In one series of tests the lamp was turned on thirty times averaging one and one-half hours each with sufficient intervals for complete cooling. The alternate heating and cooling did not result in any visible "creeping" of the base of the heating unit or corrosion of the socket. In a run of three hours there was no overheating of the base of the unit. The ventilation in the housing was good.

The lamp bears the name "Branson," which is the trademark of the firm.

The Council on Physical Medicine voted to include the Brandt Infra-Red Lamps, Models Nos. 332, 536, 538, 532, 980 and 951, in its list of accepted devices.

COSMO INFRA-RED TABLE LAMPS ACCEPTABLE

Manufacturer: Cosmo Sun Ray Products Co., Inc., 401 Lafayette Street, New York 3.

The Cosmo Infra-Red Table Lamps, Models 351 and 355, are designed for administering therapeutic heat by radiation. One model has a greater focusing range and the other model is for wide area diffusion. The burner of these lamps consists of resistance wire embedded in refractory material.

The lamps submitted by the firm have been tested as to durability, power consumption and other features. The Council on Physical Medicine voted to include the Cosmo Infra-Red Table Lamps, Models 351 and 355, and 301 and 476X, which are similar in construction to the aforementioned, in its list of accepted devices.

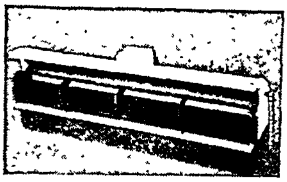
Cosmo Infra-Red Lamp
Model 351

THE GERMICIDAL UNIT ACCEPTABLE

Manufacturer: General Electric X-Ray Corp., 175 West Jackson Boulevard, Chicago 4.

The Germicidal Unit is designed for disinfecting wards, baby cubicles and operating rooms in hospitals. The fixture comes in two sizes, 30 watt and 15 watt. It is well constructed and is designed so as to prevent direct rays emitted by the source from reaching the eyes of the occupants of the enclosure, assuming that the unit is installed correctly. The source is a General Electric Germicidal Lamp (burner) the radiation of which is predominantly of wavelength 2,537 angstroms.

On being tested, the lamp was found to be satisfactory as a source of the specified type of radiation and acceptable for the uses which the Council recognizes for this type of equipment. The Council on Physical Medicine does not accept disinfecting lamps for use in offices, waiting rooms, theaters, school rooms, restaurants, hospital dining rooms or other places where people congregate. The use of disinfecting lamps is acceptable only in situations where theoretical considerations and facts of observation indicate that they can be effective, as, for instance, when properly installed in nurseries.


The Germicidal Unit.

With these reservations, the Council voted to include the Germicidal Unit manufactured by the General Electric X-Ray Corporation in its list of accepted devices.

THE JOURNAL OF THE
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SATURDAY, AUGUST 30, 1947

INFECTIOUS MONONUCLEOSIS

World War II disclosed that infectious mononucleosis is a more common disease than is generally realized. Small epidemics as well as numerous sporadic cases have been reported. Notable features of this disease are its wide variety of clinical manifestations and physical findings. To emphasize these facts, Walker[1] classified the 29 cases which he reported into six different types: respiratory, febrile, lymphadenopathy, exanthematous, gastrointestinal, and central nervous system. While some cases overlap from one clinical type into another, certain symptoms are present in nearly all cases. These symptoms were weakness, headache, chilliness, sore throat, fever, anorexia and excessive perspiration. The respiratory type with sore throat, cough and pain beneath the sternum was most common. While fever may precede and be far out of proportion to the degree of upper respiratory disease, 3 of the 29 patients had no fever during their entire clinical course. An enlarged spleen was present in 25 of the 29 cases. Lymphadenopathy also is one of the most constant features, but in only 3 of Walker's cases did general lymphadenopathy overshadow such manifestations as chills, fever and respiratory infection. In epidemics of infectious mononucleosis skin eruptions may approach a 100 per cent incidence and be either urticarial, purpuric, erythematous, macular, maculopapular or petechial. In 1 patient a diagnosis of scarlet fever was considered; another case was diagnosed at first as German measles. False positive Wassermann tests were reported by another writer[2] in 4 cases with skin eruptions. The central nervous system manifestations may include, among others, dizziness, confusion, nystagmus, diplopia and a feeling of impending syncope. The main symptoms may arise from the gastrointestinal tract and simulate appendicitis, acute gastroenteritis or enteric fevers. In such cases surgical operations have been performed. Jaundice[3] and electrocardiographic evidence of acute myocarditis and first degree heart block have been reported.[4] Indeed the unpredictable symptoms of infectious mononucleosis may simulate numerous infectious or neoplastic disorders.

Two laboratory procedures aided in the diagnosis of many cases in the armed forces which otherwise might have remained unrecognized. A striking differential blood count is constant and typical in the shift toward an increase in mononuclear cells at the expense of the neutrophils.[5] The lymphocytes show a relative and absolute increase of at least 50 per cent sometime during the disease and the lymphocyte is atypical, with definite characteristics in different patients. Kracke and Garver say that the atypical lymphocyte is specific and should act as a definite diagnostic criterion. The heterophile sheep cell agglutinin test often helps to confirm the diagnosis. While sheep cell agglutinins are present in normal human serums, especially in patients subjected to serum therapy or suffering from serum sickness, when the antibody titer is higher than 1:64 it is said to be strong evidence of the presence of infectious mononucleosis. Although 8 of Walker's patients were seronegative, that can be explained by the fact that the sheep cell agglutinins reach a peak rapidly, usually in the first week or two of the disease, and disappear just as rapidly or subside gradually. Gardner and Paul[6] in an analysis of the records of 86 cases admitted to the New Haven Hospital found that this test had been positive in only 60 per cent of the cases, even at the height of the disease.

The pathologic changes produced by infectious mononucleosis were almost wholly unknown until three years ago, when Ziegler[7] reported those found in a patient who died following rupture of the spleen. Allen and Kellner[8] have since made a similiar report on a patient killed in an airplane crash a month after the onset of this disease. These two reports explain the diversity of clinical manifestations and show that infectious mononucleosis is a generalized disease in which cellular infiltrations may develop in almost any organ. The clinical picture, therefore, varies with the organs or system predominantly involved. While the lymph nodes, spleen and nasal pharynx are the more usual sites, involvement of the lungs, liver, kidneys, heart, brain, adrenals and testes account for the unusual cases. In Ziegler's report the lesions in the liver, kidneys and lungs consisted of focal infiltrations of mononuclear cells with reticulocyte proliferation and necrosis. The changes in the spleen were more diffuse than focal. Allen and Kellner reported no gross abnormalities in the viscera (not even in the spleen), but the retroperitoneal and hilar lymph nodes were grossly enlarged. While the microscopic lesions reported by them were similar in type and distribution to those reported by Ziegler, the lungs were of special interest, since primary atypical pneumonia had been diagnosed previously in their case on the roentgenologic evidence. At that phase of his illness the patient did not have clinical infectious mononucleosis, but it is possible that the nodular infiltrations in the lungs shown by x-ray examination were those of infectious mononucleosis rather than of atypical pneumonia. This patient had no symptoms referable to the central nervous system, but the microscope revealed perivascular infiltrations of lymphoid tissue similar to those found in mild virus encephalitis. The heart showed interstitial cell infiltrations compatible with conduction changes shown in the electrocardiogram. The cellular infiltrations found in the liver and kidneys explain the occasional case in which hepatitis or nephritis dominates the clinical picture.

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[1] Walker, William H.: Infectious Mononucleosis, Bull. U. S. Army M. Dept., December 1944.

[2] Sadusk, J. F.: The Skin Eruption and False Positive Wassermann in Infectious Mononucleosis, Internat. Clin. **1**:239, 1941.

[3] Spring, Maxwell: Jaundice in Infectious Mononucleosis, Bull. U. S. Army M. Dept., October 1944.

[4] Candel, S., and Wheelock, M. C.: Acute Nonspecific Myocarditis, Ann. Int. Med. **23**:309, 1945. Logue, R. B., and Hanson, J. F.: Heart Block: A Study of 100 Cases with Prolonged PR Interval, Am. J. M. Sc. **207**:765, 1944.

[5] Kracke, R. R., and Garver, H. E.: Diseases of the Blood and Atlas of Hematology, Philadelphia, J. B. Lippincott Company, 1937.

[6] Gardner, Horace T., and Paul, John R.: Infectious Mononucleosis at the New Haven Hospital, 1941-1946, Yale J. Biol. & Med. **19**:839 (May) 1947.

[7] Ziegler, E. E.: Infectious Mononucleosis, Arch. Path. **37**:196 (March) 1944.

[8] Allen, Fred H., Jr., and Kellner: Infectious Mononucleosis, Am. J. Path., May 1947.

As the cause of infectious mononucleosis has not been determined, cases will probably continue to go unrecognized unless clinicians keep in mind the protean manifestations of this disease.

THE REVIVAL OF THE OXFORD TUBERCULOSIS VACCINE

The vole bacillus, first described by Wells in 1937 as a cause of tuberculosis in the wild vole, Microtus agrestis, and suggested as a possible means of protection against tuberculosis in man, is again given consideration as a rival to BCG. Although dormant during the war in many countries,[1] experimental study was not abandoned entirely. Birkhaug[2] smuggled cultures into Norway and reported the results of long duration tests: the immune animals outlived the controls by two hundred to six hundred days, although the difference in survival time between the vole bacillus and the BCG vaccine was not significant.[3] However, the problem of vaccination in tuberculosis has gradually gained momentum with recognition of the significance of immunity and the importance of the best possible immunizing agent. It is evident from the extensive human vaccination tests being planned in the United States,[4] in spite of the numerous experiences with BCG in Europe and South America, that any general approval of BCG will be delayed.

Now, however, further sound words emanate from the Oxford investigators which show the changing trends and cast aside previous objections to the vole bacillus by American investigators[5] in favor of BCG or an avirulent human bacillus (for specific reasons) universally avirulent to man and animals. The vole bacillus is still pathogenic to the vole as well as to guinea pigs. The major concern for BCG at first was that it might return to virulence; now it is contended that it has so decreased in virulence that it is no longer an efficient antigen. On this basis it is suggested that the vole bacillus contains a suitable virulence for vaccination. The vole bacillus is not attenuated by cultivation in vitro, and the virulence for voles can be maintained indefinitely by passage. This, however, again centers on the whole problem of virulence and its significance as an antigen for tuberculosis vaccination, which apparently has not been settled[6] convincingly. Most important is the contention posed by the Oxford investigators that "to plan a controlled experiment in tuberculosis vaccination in man is a matter of so much difficulty as to be virtually impossible." This contention appears to be supported by the extensive BCG experience in man without apparent decision as yet.

According to the Oxford group none of the many reports hitherto published claim individually to give convincing proof of the protective value of BCG. "It is clear that such vaccination is rational, safe and capable of producing a tuberculin sensitivity in a high portion of persons."[7] Comparing BCG and the vole bacillus, it is maintained that the vole bacillus does not cause other than localized disease, the local reaction is similar to BCG, tuberculin allergy with the vole bacillus is greater and occurs earlier than that following BCG vaccination, the degree of induced resistance in guinea pigs is greater early in the disease but less late in the disease than with BCG, in cattle it may be more with vole, while in man no evidence is available, and the stability of virulence is greater than BCG, which is viewed as favorable to the use of the vole bacillus. Certainly the vole bacillus is presented as a challenge to BCG and as such should add impetus to the study of the important problem of tuberculosis immunity as well as its application for vaccination of man and possibly of cattle.

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[1] The Oxford Tuberculosis Vaccine, editorial, J. A. M. A. **116:** 509 (Feb. 8) 1941.

[2] Birkhaug, Konrad: Immunization with the Vole Bacillus: The Protective Value of the Vole Bacillus (Wells) as Compared with BCG Against Tuberculous Infection, Am. Rev. Tuberc. **53:** 411 (May) 1946.

[3] The Vole Bacillus, editorial, Brit. M. J. **1:** 770 (May 31) 1947.

[4] Report of a Conference on BCG Vaccination, Pub. Health Rep. **62:** 346 (March 7) 1947.

[5] Corper, H. J., and Cohn, Maurice L.: Studies with the Vole (Meadow Mouse) Acid Fast Bacillus: Virulence, Pathogenicity and Specific Allergic Sensitizing and Immunizing Properties, Am. J. Clin. Path. **13:** 18 (Jan.) 1943.

[6] Corper, H. J.: An Interpretation of the Virulence (or Pathogenicity) of Tubercle Bacilli Based on Experimental Observation: Mycobacterium Nusquam Phymatiosis, J. Infec. Dis. **60:** 312 (May-June) 1937.

[7] Wells, A. Q.: The Murine Type of Tubercle Bacillus (The Vole Acid Fast Bacillus), Medical Research Council Special Report Series No. 259, London, His Majesty's Stationery Office, 1946, p. 1.

HORMONES AND CANCER

Estrogenic materials have been used for the palliative treatment of carcinoma of the prostate gland to relieve the victim of some of the discomforts arising from this disease. The action apparently is not curative and additional careful study of this procedure is essential, as such drugs are not wholly free of dangerous possibilities.

More recently further interest has been aroused in the relation of endocrines to cancer with the discovery that testosterone may have some effect on mammary cancer. While testosterone seems to have a palliative effect in some cases of breast cancer, other cases may be made immeasurably worse. At times the cancer can be caused to progress rapidly. Until a thorough and extensive study of this problem can be made the medical profession should not be encouraged to use testosterone or any other steroid in the treatment of breast cancer.

The indiscriminate use of hormones in cancer is associated with danger to such patients. The procedure is strictly in the stage of experimental investigation. And yet one manufacturer of testosterone preparations has the temerity to issue a booklet entitled "Progress in Cancer" in which the use of this hormone in the treatment of cancer is apparently presented as an established procedure with little need for worry about untoward effects. It is a reflection on the scientific control exerted over the advertising material of this firm, which apparently has a greater interest in promotion and sales than in the welfare of the sick.

The problem, which this manufacturer treats so lightly, is so important that the Therapeutic Trials Committee of the Council on Pharmacy and Chemistry has undertaken an exhaustive investigation of the use of testosterone and other steroids in mammary and, later, other cancers. There are many questions and many problems to be solved. A report will be issued in the near future by a special subcommittee. Until then it would seem wise to regard this new treatment only with interest, leaving the enthusiasm, if any, for those who are qualified by experience to express an authoritative opinion. It would be wise for all manufacturers and distributors of testosterone to adopt this attitude, remembering that a disservice to the medical profession, such as premature promotion, will eventually reflect unfavorably on those responsible for the disservice. Flamboyancy in advertising to the medical profession has no place today, especially when relating to a public health problem as serious as cancer.

Current Comment

ANTIVITAMIN ACTIVITY OF RELATED COMPOUNDS

That certain chemical compounds closely related to the various vitamins have "antivitamin" activity is now well established. In a review of this question, Woolley[1] points out that there is at least one known "antivitamin" for each of the water soluble vitamins and for two of the four fat soluble vitamins. Pyrithiamine, the antivitamin for thiamine, is an excellent example; when this substance is administered orally to mice or to rats, the classic symptoms of thiamine deficiency appear and the administration of a sufficient amount of thiamine will completely nullify the effect. The same phenomenon has been observed following the administration of certain analogues of riboflavin, pantothenic acid, pyridoxine, biotin, pteroyl-glutamic acid, ascorbic acid and niacin. A new antiniacin compound has been isolated from corn and has been identified as indole acetic acid.[2] One view[1] holds that the presence of this "pellagragenic" agent in corn is related to the relatively frequent occurrence of pellagra in corn-eating populations. The antagonistic action of chemical analogues is not limited to the vitamins alone, as might be expected. In the review cited,[1] a surprisingly varied list is given of important metabolites for which antagonistic chemical analogues have been found. The list includes a number of the amino acids, both essential and nonessential, several purines, porphyrins, and even two hormones, testosterone and thyroxine. One view[3] has been expressed that sex in higher animals may be in part an expression of metabolic competition between the androgens and estrogens. The mode of action of the various "antimetabolites" is as yet conjectural. The hypothesis which most nearly fits the observed facts is that the vitamins and other substances for which "antianalogues" have been found normally combine with a specific part of a protein to form the metabolically active compound, perhaps an enzyme. If the vitamin should be displaced from the protein by its analogue which cannot carry on its metabolic function, then functional failure would obviously result just as if the vitamin was entirely lacking in the diet. A somewhat analogous situation is seen in carbon monoxide poisoning, in which case the oxygen of hemoglobin is replaced by the related chemical substance carbon monoxide, and a failure in oxygen transport results. The inhibitory action of various analogues of metabolites has practical applications of great value in clinical medicine. The action of the various sulfonamide drugs in combating infectious diseases, for example, is undoubtedly a manifestation of this phenomenon. The sulfonamide compound apparently displaces some functional metabolite, probably p-aminobenzoic acid, in the micro-organism and the observed bacteriostatic action results. Future research in this general field should disclose many new facts of practical medical value.

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1. Woolley, D. W.: Recent Advances in the Study of Biological Competition Between Structurally Related Compounds, Physiol. Rev. **27:** 308 (April) 1947.
2. Kodicek, E.; Carpenter, K. J., and Harris, L. J.: Lancet **2:** 491 (Oct. 5) 1946.
3. Woolley, D. W.: Advances in Enzymology **6:** 129, 1946.

ORGANIZATION SECTION

Medical Legislation

MEDICAL BILLS IN CONGRESS

Army-Navy Medical Services Corps Act of 1947

A bill proposing to revise the Medical Departments of the Army and Navy, H. R. 3215, has passed the House and Senate It proposes to establish in the Medical Department of the Regular Army a Medical Service Corps consisting of the Pharmacy, Supply and Administration Section, the Medical Allied Sciences Section, the Optometry Section, the Sanitary Engineering Section and such other sections as may be deemed necessary by the Secretary of War. A similar corps will be created in the Medical Department of the Navy. The President has approved this legislation.

Dental Research

A bill to provide for, foster and aid in coordinating research relating to dental diseases and conditions and to establish the National Institute of Dental Health as a division of the National Institute of Health, S. 176, has been passed by the Senate It proposes an appropriation of $2,000,000 for the construction of a building for the use of the Institute and an annual appropriation of $730,000 to carry out the purposes of the legislation, including grants-in-aid for research projects.

United States Public Health Service

Companion bills have been introduced to amend the Public Health Service Act in regard to certain matters of personnel and administration, S. 1454, introduced by Senator Taft, Ohio, and H. R. 3921, introduced by Representative Wolverton, New Jersey. Both bills have been favorably reported, with amendments. The general purpose of the legislation is to aid the Public Health Service in overcoming its professional personnel problems through revision of its promotion system, modification of its authority to make original appointments at advanced grades, and authorizing it to make expenditures necessary to keep its commissioned officers abreast of the latest developments in medical and related scientific and public health fields. One amendment recommended by the House Committee on Interstate and Foreign Commerce would authorize the appointment of osteopaths as commissioned medical officers in the Public Health Service.

Miscellaneous

H R. 4071 has been reported to the House, proposing to give the Food and Drug Administration jurisdiction over foods, drugs, devices or cosmetics when held for sale, whether or not the first sale, after shipment in interstate commerce.

Senator Pepper, Florida, for himself and Senator Murray, Montana, Senator Wagner, New York, Senator Taylor, Idaho, and Senator Chavez, New Mexico, has introduced S. 1714, a bill to provide for the general welfare by enabling the several states to make more adequate provision for the health of mothers and children and for services to crippled children. This legislation is similar to the bill introduced in the Seventy-Ninth Congress by Senator Pepper and other senators, S. 1318, proposing to enact the Maternal and Child Walfare Act of 1945.

S 1302 has passed the Senate, proposing to aid the associations, groups, organizations and institutions encouraging participation of the youth of the country in athletic and sports programs by making available to them surplus athletic equipment.

The Senate Committee on Finance has been authorized by S. Res 111 to make a complete and full investigation of old age and survivors insurance and all other aspects of the existing social security program for the purpose of assisting the Senate in dealing with legislation relating to social security.

The establishment of a United States Commission for the Promotion of Physical Fitness is contemplated by H R. 4255, introduced by Representative Hartley, New Jersey.

Senator Murray, Montana, for himself and Senator Wagner, New York, has introduced S. 1734, a bill to amend the Social Security Act by providing for a national system of unemployment and temporary disability insurance, including the providing for the furnishing of medical, surgical, institutional, rehabilitation, or other services to disabled individuals entitled to receive insurance benefits if such services may aid in enabling such individuals to return to gainful work. A companion bill has been introduced in the House by Congressman Dingell, Michigan, as H. R 4390. A similar bill has been introduced by Representative Donohue, Massachusetts, H. R. 4436.

A bill to amend Veterans Regulation Numbered 1 (a), parts I and II, H. R. 3889 has passed the House to establish a presumption of service connection for chronic and tropical diseases.

Legislation providing for water pollution control activities in the U. S. Public Health Service and in the Public Works Agency, S 418, has passed the Senate

A bill introduced by Representative Bolton, Ohio, as H. R. 4211, proposes to amend the federal Food, Drug and Cosmetic Act so as to prohibit the introduction into interstate commerce of salt sold or to be sold in containers containing 3 pounds or less of salt, granules of which will pass through a number 20 United States standard sieve, unless such salt contains suitable iodides in a quantity equivalent to not less than 75 parts and not more than 150 parts of iodine per million parts of such salt.

A bill introduced by Representative Welchel, Ohio, H. R. 4163, contemplates the providing of medical and hospital service for those employed in the maritime service.

An amendment to the social security act is proposed by H. R. 3636, introduced by Representative Forand, Rhode Island, to enable states to establish more adequate public welfare programs, including the supplying of medical services for certain needy individuals. A similar bill is pending in the Senate, S. 1355, introduced by Senator Cooper, Kentucky.

A bill introduced by Senator Saltonstall, Massachusetts, S. 1649, would authorize the payment of certain claims for medical care and treatment of personnel of the Army, Navy, Marine Corps, Coast Guard, Coast and Geodetic Survey and Public Health Service furnished other than by activities of the federal government.

Representative Goodwin, Massachusetts, proposes by H. R. 4430 to provide such hospitalization for members of the Reserve components of the Army, Navy, Marine Corps and Coast Guard in any army, navy or marine hospital as is necessary for the appropriate treatment of any disease, illness or injury suffered or contracted when such care and hospitalization can be provided within the limitations existing in such hospitals.

The Veterans Administration would be authorized to assist states, counties and municipalities in the treatment of veterans suffering from tuberculosis, by H. R. 3709, introduced by Representative Lane, Massachusetts.

Washington Letter

(From a Special Correspondent)

Aug. 27, 1947.

Hot Weather Increase in Poliomyelitis Below 1946 Total

A press service survey revealed that the usual hot weather increase in the number of cases of infantile paralysis has occurred, but the total is far below that of last year. Idaho reported the worst outbreak, with state authorities planning to set up an emergency committee in an effort to halt the spread of the disease. There were 60 cases there as compared with 11 at this time last year. Throughout most of the nation, the incidence of the disease was reported considerably below last year.

Veterans of Foreign Wars Blame Agency for Selecting Hospital Site

The Maryland Veterans of Foreign Wars has accused the Veterans Administration of wastefulness in spending more than $300,000 on the Nevius tract in Arlington County as the site for a veterans hospital, when land was available for $25,000 to $30,000 close to the present Naval Medical Center in Bethesda. The Nevius tract has since been abandoned. In addition, Dr. R. E. Dyer, director, National Institute of Health, expressed the opinion that it would be wise to erect the veterans hospital in Maryland. He points out that if it was near the U. S. Public Health Service's proposed $22,000,000 medical center it would be possible to exchange staff and facilities.

The Nevius tract is unsuitable for a veterans' hospital because it is too near Arlington cemetery for best morale of patients, according to Representative House Smith of Virginia, whose rider to a Veterans Administration appropriation bill halted work on the project. The government has already paid $850,000 for the site and spent $250,000 for plans.

Army Nurse Recruitment Deadline Extended

The War Department has announced that the July 31 deadline established for submission of applications for appointment to the new Regular Army Nurse Corps has been extended two months to September 30. This was done to give all qualified nurses a chance to apply, according to Col. Florence A. Blanchfield, Army Nurse Corps chief. Commissions are currently limited to officers between 21 and 34 inclusive who have served satisfactorily in the Army Nurse Corps during World War II. Women who are married or who have dependent children under 14 will not be appointed to the Regular Army.

Funds for Research in Heart Disease

Senator Pepper, Florida Democrat, asked the Senate Appropriations Committee to authorize $2,900,000 for the U. S. Public Health Service to finance research into causes and cures for heart diseases.

Bureau of Information

LOCATION OF PHYSICIANS

Virginia Shuler
Chicago

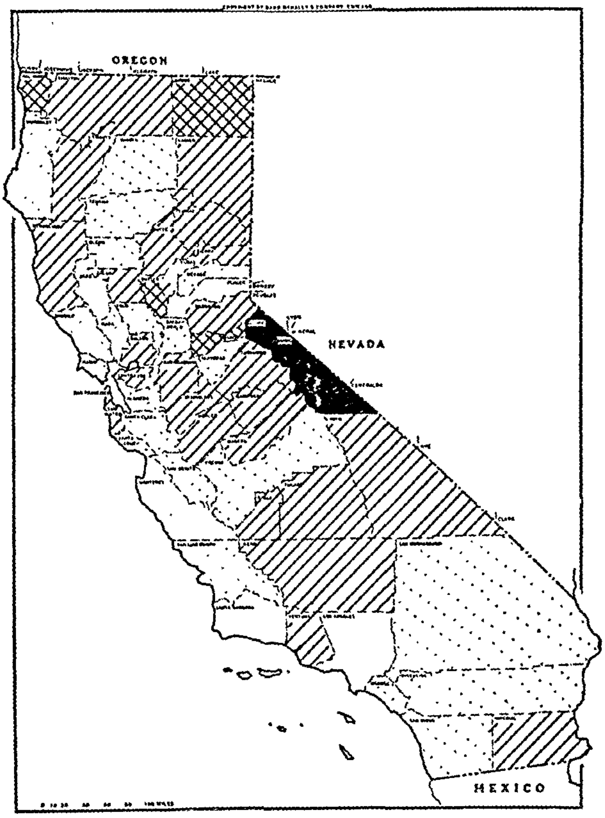
This is the ninth of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

"California's medical population, like its general population, has been increasing since prewar days and the in-migration continues today. The shipyards attracted many people to the state prior to the entry of the United States into the war, when ships were being built under lend-lease arrangements for France and Great Britain. With our own participation in the war, the shipyards and airplane plants combed the country for employees and the population of the state jumped some 2,500,000 in a period of about five years.

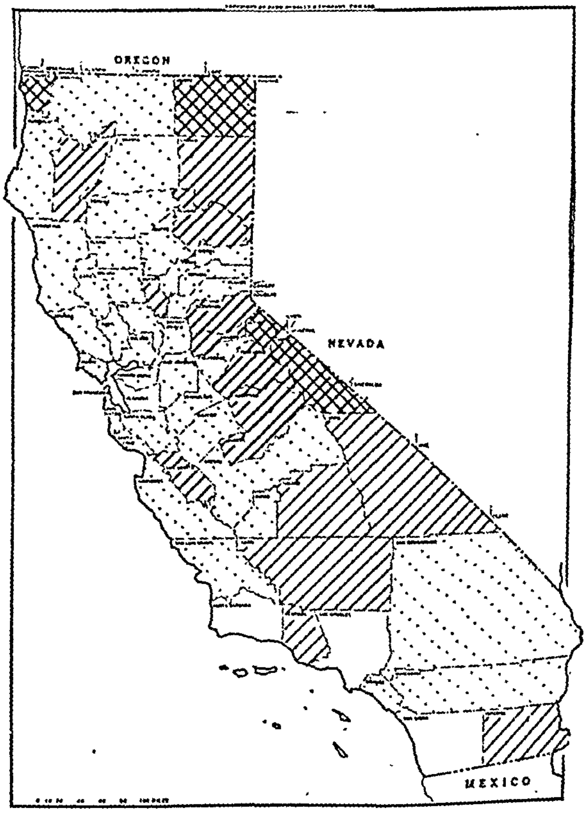
"With the presence of numerous army and navy camps in California throughout the war, and with California as the major jumping-off place for the Pacific war theater, many physicians spent weeks or months in California, and surveys now show that practically every doctor who went through California in a jeep has now decided to locate there. There are opportunities for doctors in practically every section of the state, although the tendency of most newcomers is to try to locate in the metropolitan areas of Los Angeles or San Francisco. There is little need for additional doctors in these areas, which have always maintained a high physician-population ratio, but there are numerous communities of smaller size which need additional medical services. Many of these are the smaller centers in the mountain areas, where outdoor life beckons the enthusiast and where medical practice can be carried on alongside gracious outdoor living. Some are lumber towns, some in the desert. Hospital facilities are not evenly distributed but in the main are fairly modern; naturally there is an overall shortage of hospital beds, since no construction took place during the booming population days of the war."

Mr. John Hunton, Executive Secretary,
California Medical Association,
450 Sutter Street, San Francisco 8.

CALIFORNIA—1946



CALIFORNIA—1947



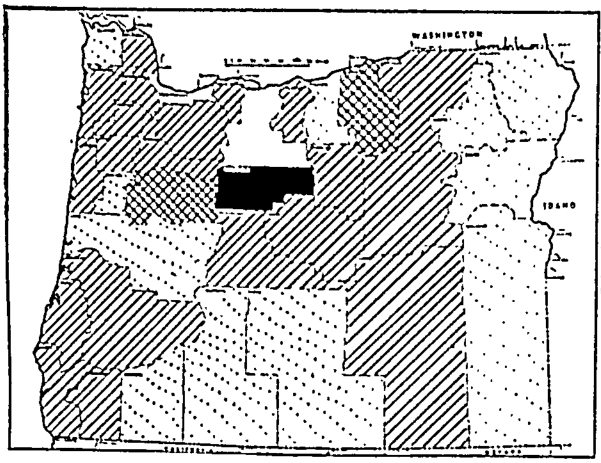
Population for 1946 based on 1943 estimated census figures—for 1947 based on 1947 estimated figures submitted by state medical society, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

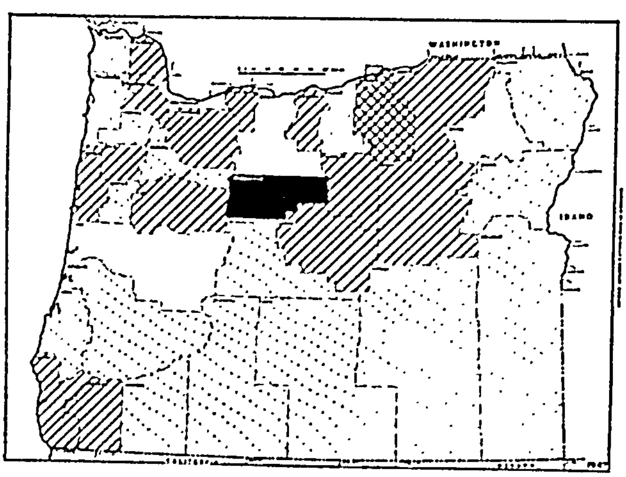
Areas in California Requesting General Practitioners

County	Town	Population	County	Town	Population
Alameda	Berkeley	86,000	Modoc	Cedarville	825
Butte	Feather Falls	925		Fort Bidwell	300
Calaveras	Westpoint	450	Shasta	Burney	1,000
Colusa	Colusa	2,285	Siskiyou	Happy Camp	400
Contra Costa	Richmond	23,642		Tule Lake	785
Inyo		7,625	Tehama	Los Molines	900
Mendocino	Philo	110	Yuba	Wheatland	496

OREGON—1946



OREGON—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Oregon Requesting General Practitioners

County	Town	Population
Klamath........................	Malin...........................	535
Lincoln........................	Taft...........	350

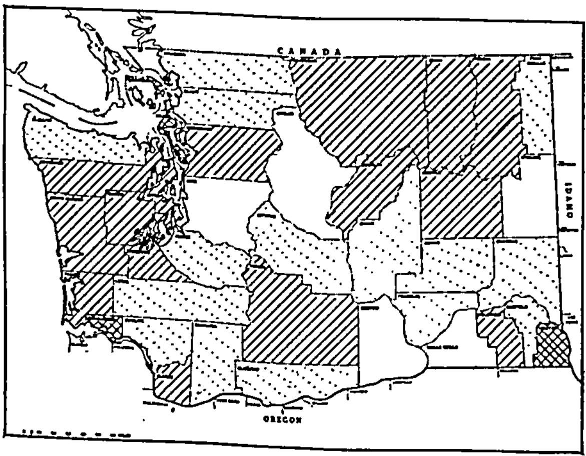
"We do not have any serious maldistribution of physicians in Oregon, and considerable improvement is to be observed since the war. In a number of instances young physicians, most of them war veterans, have located in "one doctor" towns, replacing old physicians who have died or retired.

"The Oregon legislature has enacted companion legislation to the federal hospital survey and construction act. Under authority granted by this legislation, the Oregon State Board of Health has established a Division of Hospital Survey and Construction, and a statewide survey of hospital needs and facilities is now under way.

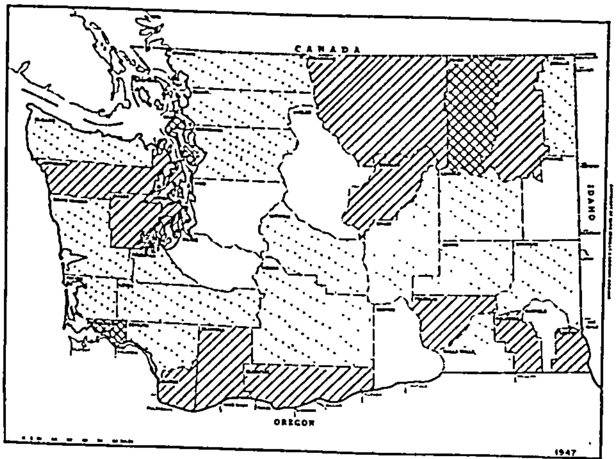
"Several Oregon communities are ready to begin construction of new hospital facilities. Most of these communities are raising their own funds through the county or other municipal corporation."

THOMAS S. SAUNDERS, M.D., Secretary,
Oregon State Medical Society,
1020 S. W. Taylor Street, Portland, Ore.

WASHINGTON—1946



WASHINGTON—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

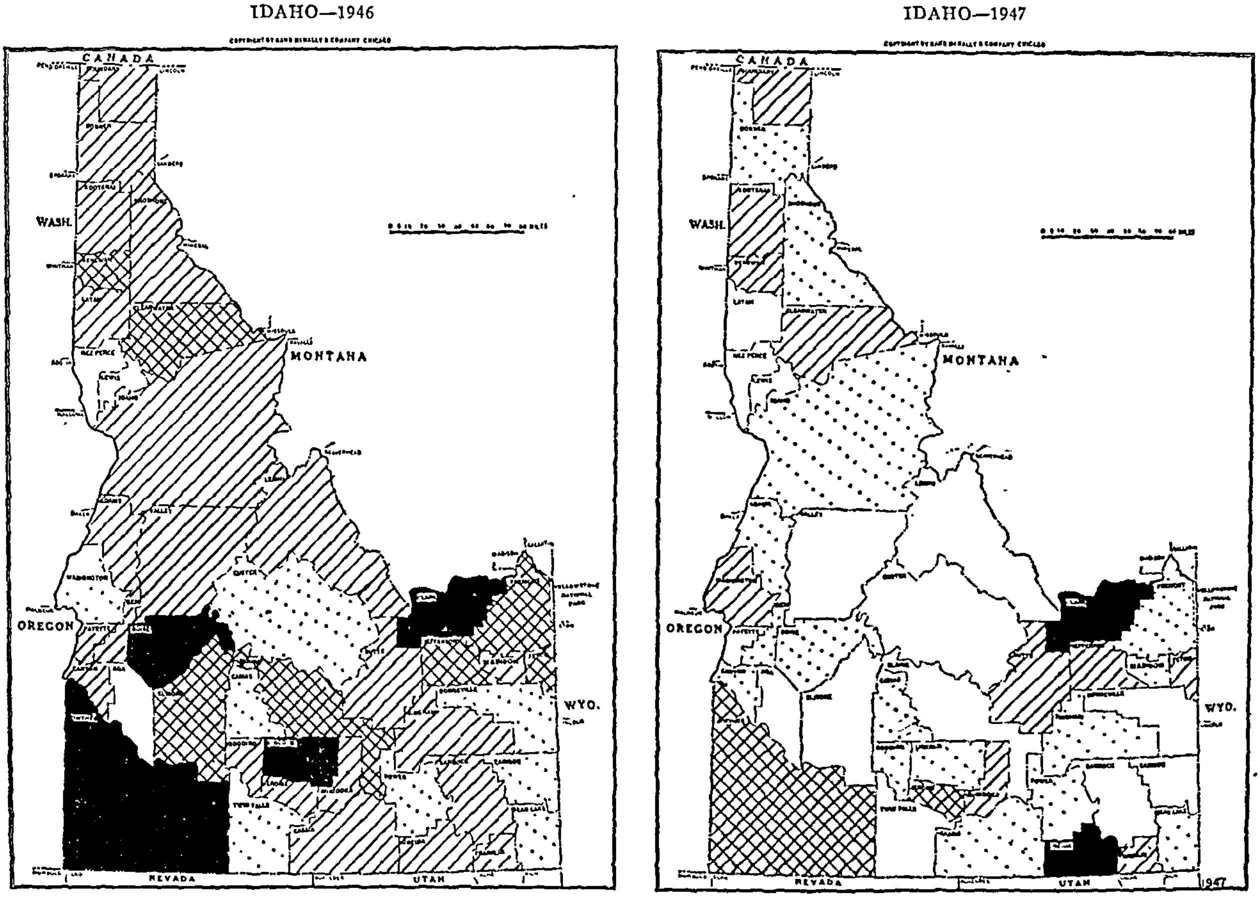
Areas in Washington Requesting General Practitioners

County	Town	Population
Benton..........................	....	12,053
Franklin........................	....	6,307
Grant...........................	Quincy..........................	318
Grays Harbor....................	....	53,166
	Westport........................	600
Klickitat.......................	....	11,357
Okanogan........................	....	24,546
San Juan........................	....	3,157
Skomania........................	....	4,633

"Returning veterans and an influx of out of state doctors seem to have erased the shortage of doctors that existed in this state for the past several years, except for one or two isolated spots in the hinterland. These isolated spots exist in areas so sparsely settled that we as yet have been unable to locate doctors there. Our membership now numbers more than 1,800 doctors.

"There is, however, a shortage of specialists in several areas such as orthopedists, eye, ear, nose and throat specialists and pediatricians."

MR. RALPH W. NEILL, Executive Secretary,
Washington State Medical Association,
327 Cobb Building, Seattle.


IDAHO—1946

IDAHO—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Idaho Requesting General Practitioners

County	Town	Population
Ada	Kuna	443
Bingham	Firth	242
Canyon		40,987
Clark		1,005
Clearwater	Pierce	381
Custer	Challis	600
Fremont		10,304
Goodring	Hagerman	435
Idaho	Kooskia	490
	Stites	258
Jefferson		10,762
Lemhi		6,521
Madison		9,186
Shoshone		21,230
Teton		3,601

"We are having a great deal of trouble in getting doctors to locate in towns of 2,000 or less, especially those without hospital facilities. The larger centers have adequate medical care, but it is anticipated that even they will be troubled with a shortage, as a great number of older men who carried on during the war are rapidly dropping out."

WILLIAM B. HANFORD, M.D., Past Secretary,
Idaho State Medical Association,
Caldwell, Idaho.

NEVADA

"Many doctors have migrated since the war into the two largest population centers of Nevada, Reno and Las Vegas, and both of these towns have grown proportionately. Doctors have about doubled in both these cities and the population has increased slightly less in proportion, about 40 per cent.

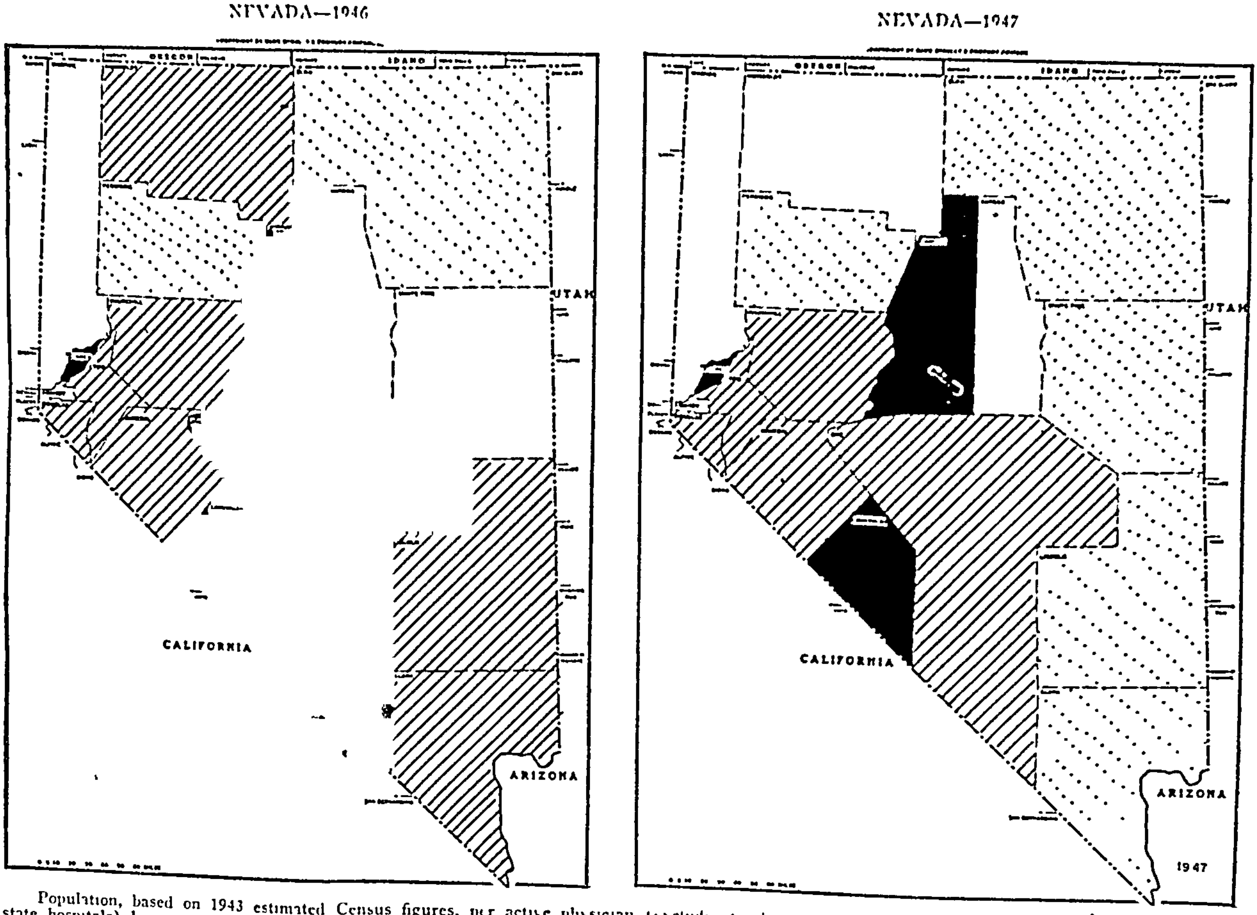
"There are about 50,000 people in the Reno area, with a little less than 80 doctors here, which is about 1 doctor to 600 or 700 population.

"In Las Vegas there are roughly 30,000 to 35,000 people and 30 doctors, which makes it a ratio of close to 1 doctor per each thousand population.

MORETON J. THORPE, M.D., Secretary,
Nevada State Medical Association,
17 N. Virginia, Reno, Nev.

Areas in Nevada Requesting General Practitioners

County	Town	Population
Clark	Mospa Valley and Virgin Valley	3,000 (comb.)
Elko	Wells	830
Lander		1,745
White Pine	East Ely	673


NEVADA—1946 NEVADA—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county

Key: Physician population ratio by county. plain area 1 999, dotted area 1,000 1,499, striped area 1,500 2,999, checked area 3,000 and over, solid black area no doctor.

Coming Medical Meetings

American Academy of Neurological Surgery, Colorado Springs, Broadmoor Hotel, Oct 9 11. Dr. T. C Erickson, 1300 University Ave, Madison 5, Wis, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Palmer House, Oct 12 17 Dr W L. Benedict, 102 Second Ave S W., Rochester, Minn, Secretary.

American Anti Arthritis Association, Del Mar, Calif., Oct. 4 5. Dr. Robert T. Pottenger, 65 N Madison Ave, Pasadena, Calif, Secretary.

American Association of Medical Record Librarians, New York, Hotel Commodore, Sept. 7 12 Mrs Adaline Hayden, 18 E Division St, Chicago, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va, The Homestead, Sept 4 6 Dr. James R. Bloss, 418 Eleventh St, Huntington 1, W. Va, Secretary

American Clinical and Climatological Association, Colorado Springs, Oct 13 15 Dr James Bordley III, Johns Hopkins Hospital, Baltimore 5, Secretary

American College of Surgeons, New York, Waldorf Astoria Hotel, Sept. 8 12 Dr. Paul B Magnuson, 40 E Erie St, Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept 2 6 Dr Richard Kovacs, 2 E 88th St, New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept 8 12 Mr. Karl S. Richardson, 24 West Ohio St, Chicago, Business Manager

American Hospital Association, St Louis, Sept 22 25. Mr. George P. Bugbee, 18 E Division St, Chicago, Exec Secretary.

American Public Health Association, Atlantic City, Oct. 6 10 Dr. Reginald M Atwater, 1790 Broadway, New York 19, Executive Secretary

American Roentgen Ray Society, Atlantic City, Sept. 16 19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Central Neuropsychiatric Association, Galveston, Texas, Oct 17-18 Dr. William C Menninger, 3617 W Sixth Ave, Topeka, Kans, Secretary.

Colorado State Medical Society, Denver, Shirley Savoy Hotel, Sept 17 20. Mr. Harvey T Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

Connecticut Clinical Congress, New Haven, Sept 16 18. Dr Francis G. Blake, 258 Church St, New Haven, Chairman.

Delaware, Medical Society of, Wilmington, Oct 13 15. Dr. John F. Hynes, Memorial Hospital, Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Oct 6 8. Mr. Theodore Wiprud, 1718 M Street N.W, Washington 6, Secretary.

International Cancer Research Congress, St Louis, Hotel Jefferson, Sept 2 7. Dr. Axel N. Arneson, 510 S Kingshighway, St Louis, Chairman Committee on Local Arrangements

International College of Surgeons, U. S Chapter, Chicago, Palmer House, Sept 29 Oct 2 Dr. Louis J. Gariepy, 16401 Grand River Ave, Detroit 27, Secretary.

Inter State Postgraduate Medical Association of North America, St. Louis, Public Auditorium, Oct. 14 17. Dr. Tom B Throckmorton, 406 Sixth Ave, Des Moines, Iowa, Secretary.

Kentucky State Medical Association, Louisville, Sept 29 Oct. 2 Dr P. E Blackerby, 620 S Third St, Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept. 23 26 Dr. L Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Oct. 1 3 Dr. Harold Swanberg, 510 Maine St, Quincy, Ill, Secretary

Nevada State Medical Association, Reno, Sept 4 6 Dr Moreton J. Thorpe, 17 N Virginia St, Reno, Secretary

Northern Minnesota Medical Association, Pequot Lakes, Breezy Point Lodge, Sept. 6 Dr. C L Oppegaard, Crookston, Secretary.

Oregon State Medical Society, Portland, Sept 4 6 Dr Thomas S. Saunders, 1020 S W. Taylor St, Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept 15 18 Dr Walter F Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary

Southern Psychiatric Association, Birmingham, Ala, Oct 13 14 Dr. Newdigate M Owensby, 384 Peachtree St. N E, Atlanta, Ga, Secretary.

Utah State Medical Association, Salt Lake City, Sept 11 13 Dr Ray T. Woolsey, 316 Atlas Bldg, Salt Lake City 1, Secretary

Vermont State Medical Society, Burlington, Hotel Vermont, Oct 1 3. Dr. Theodore H Harwood, 128 Merchants Row, Rutland, Secretary.

Virginia, Medical Society of, Roanoke, Oct 13 15 Miss Agnes V. Edwards, 1200 E Clay St, Richmond 19, Secretary.

Washington State Medical Association, Seattle, Olympic Hotel, Sept 28-Oct 1. Dr Harold E Nichols, 327 Cobb Building, Seattle, Secretary.

Western New York and Ontario Urological Society, Saranac, N Y, Saranac Inn, Sept 3 6 Dr Albert M Crance, 525 S. Main St., Geneva, N Y., Secretary

Wisconsin, State Medical Society of, Milwaukee, Oct 6 8. Mr. Charles H Crownhart, 110 E Main St, Madison 3, Secretary.

World Medical Association, Paris, France, Sept 17 20 Dr Charles Hill, B M. A House, Tavistock Sq, London, W. C 1, England, and Dr. P. Cibrie, 60 boulevard de Latour Maubourg, Paris 7e, France, Joint Secretaries

GOVERNMENT SERVICES

ARMY

COURSE FOR AVIATION MEDICAL EXAMINERS

Twenty Medical Reserve Corps officers will attend a ninety day course at the School of Aviation Medicine, Randolph Field, Texas, this fall. Graduates of the course will be designated as aviation medical examiners. From October 6 to December 12 the course will stress the fundamentals of aviation medicine and the special examinations used for flying personnel. Those eligible are Medical Corps reserve officers under 40 years of age who are physically qualified for flying and have an efficiency index of 4 or better. Officers now designated as flight surgeons or aviation medical examiners will not be accepted for the course. Applications should be made in writing to the Military Personnel Section, Surgeon General's Office, the Pentagon, Washington 25, D. C.

NEW CHIEF OF NUTRITION BRANCH

George Hugh Berryman, Ph.D., formerly director of the Medical Nutrition Laboratory of the Surgeon General's Office, has been made chief of the nutrition branch of the Quartermaster Food and Container Institute for the armed forces. Dr. Berryman, after graduating at the University of Scranton and Pennsylvania State College, and after serving a fellowship in physiologic chemistry at the Mayo Clinic, obtained his Ph.D. from the University of Minnesota. After entering the Army in 1941 he was chief of the Division of Food and Nutrition of the Army Medical School in Washington; in 1944, when that division was expanded to become the Medical Nutrition Laboratory in Chicago, he was transferred to that city, becoming director with the rank of major in May 1946. Dr. Berryman plans also to resume his medical studies at the University of Chicago in October.

ARMY AWARDS AND COMMENDATIONS

Major General Howard McC. Snyder

The Distinguished Service Medal has been awarded to Major Gen. Howard McC. Snyder. The citation reads as follows: Major Gen. Howard McC. Snyder performed exceptionally meritorious and distinguished service as assistant to the inspector general from October 1940 to June 1945, displaying in his duties as a special medical inspector deep devotion to his task, courage of conviction and sound professional knowledge. He demonstrated a thorough understanding of the medical problems presented to the War Department and applied intense efforts to provide correct solutions for them. He made surveys at induction stations, reception centers and camps to accumulate highly valuable data and studied both the Mediterranean and European theaters of operation to effect greater efficiency in medical installations. Through his skilful and energetic approach to a wide variety of problems, General Snyder was largely responsible for the success of many important military functions. His was a material contribution to the war effort. Dr. Snyder graduated from the Jefferson Medical College at Philadelphia in 1905 and entered the military service in 1907.

NAVY

EXAMINATIONS FOR APPOINTMENT IN NAVY MEDICAL CORPS

The Bureau of Medicine and Surgery, Navy Department, announces that examinations for the selection of candidates for appointment to the grade of Assistant Surgeon with the rank of Lieutenant (junior grade) in the Medical Corps of the Navy will be held at all naval hospitals in the United States, October 6-10.

Graduates of approved medical schools in the United States or Canada who have completed intern training in accredited hospitals or who will complete such training within four months of the date of the examination and who are physically and in other respects qualified may be examined for appointment. Candidates, who must be less than 32 years of age at the time of appointment, will be required to appear before boards of medical examiners and supervisory naval examining boards at the naval hospital nearest their place of residence to demonstrate their physical and professional qualifications. Following approval by the President, selected candidates will be issued appointment and orders assigning them to duty in a naval medical facility.

The attention of prospective candidates is invited to Public Law 365, 80th Congress, which provides additional compensation of $100 a month for active service performed by medical officers. This is in addition to any pay, allowances or emoluments that medical officers are otherwise entitled to receive. A further proviso of the law limits the amount that is to be paid to any officer under this authority to a total of $36,000, computed on the basis of $1,200 for a period of thirty years' active service.

Information as to procedure of application may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

NAVY ADOPTS TUBERCULIN SKIN TEST

The Bureau of Medicine and Surgery of the U. S. Navy has recently introduced the tuberculin skin test in the physical examination of recruits in order to determine their fitness for duty in the Navy and the Marine Corps. After testing, all recruits will be classified into two groups, those who have positive skin reactions and those with negative reactions. Both classes will be reexamined annually to make certain that tuberculosis has not developed or further progressed. The information gained during the ensuing years, it is said, will be of value not only to the Navy but to the individuals concerned, and to public health in general.

NAVY AWARDS AND COMMENDATIONS

Captain Frederick S. Schofield

The Bronze Star Medal has been awarded to Capt. Frederick S. Schofield (MC), U.S.N.R., of Philadelphia. The citation reads as follows: For meritorious service as executive officer of the Koli Point branch of United States Naval Mobile Hospital Number Eight, Guadalcanal, in connection with operations against the Japanese from July 1, 1943 to May 17, 1944. Skilled and tireless in the performance of duty, he valiantly performed his complex professional and executive duties under conditions of fatigue and disease, insufficient equipment, medical supplies and personnel and constant danger from air attacks, contributing to the successful and efficient functioning of the large and expanding hospital. His unswerving devotion to duty, great professional skill and gallant concern for the welfare of his fellow men reflected great credit on Captain Schofield and upheld the highest traditions of the United States Naval Service. Dr. Schofield graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1920 and entered the military service in June 1941.

PUBLIC HEALTH SERVICE

DR. R. R. SAYERS BECOMES CHAIRMAN OF BOARD OF MINERS FUND

Dr. R. R. Sayers, medical director, U. S. Public Health Service, and director, U. S. Bureau of Mines, since 1940, has been granted leave without pay to accept the chairmanship of the medical board established by the trustees of the Welfare and Retirement Fund of the United Mine Workers of America. In this position Dr. Sayers will advise trustees of the miners' fund on health and medical problems and will assist state and local public health authorities, as well as coal operators and unions, in carrying out recommendations contained in the Medical Survey of the Bituminous Coal Industry issued last spring by Rear Admiral Joel T. Boone. The recommendations of the survey call for close cooperation among miners, operators, medical societies, health organizations and federal, state and local official agencies. Dr. Sayers is an authority on various industrial health problems. His studies on carbon monoxide resulted in the development of the ventilation system used in vehicular tunnels throughout the world. His introduction of warning agents into manufactured and natural gas, which are otherwise odorless, makes leakages of gas detectable. He is an authority on pneumonoconiosis. A native of Indiana, he obtained his M.D. degree from the University of Buffalo School of Medicine. He became a commissioned officer of the U. S. Public Health Service in 1915 and served as chief of the Industrial Hygiene Division from 1933 to 1940.

POSTGRADUATE EDUCATION IN MARINE HOSPITALS

There are 119 rotating internships available in the U. S. Marine Hospitals: 36 in Staten Island, 12 in Baltimore, 10 in Norfolk, 12 in New Orleans, 14 in San Francisco, 12 in Seattle, 6 in Chicago, 6 in Detroit, 6 in Cleveland and 5 in Galveston. Eight mixed internships are available in the Boston Marine Hospital. Application blanks may be obtained by addressing a request to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

Internships.—Approved one year mixed and rotating internships are offered in eleven Marine Hospitals to graduates of approved medical schools. The policy of the Public Health Service regarding medical internships is as follows:

1. Recruitment and selection of interns will be done in accordance with the agreement for intern placement which has been approved by the Association of American Medical Colleges.

2. The Committee on Internships will review applications and select applicants as required by the service. With due consideration to the applicant's expressed preference, the committee will designate the hospitals to which successful applicants are to be assigned.

3. All candidates selected for internships in Marine Hospitals may be considered for commissions in the grade of assistant surgeon (comparable to first lieutenant, army rank) in the Reserve Corps of the Public Health Service. Interns so commissioned will serve on an active duty status and will enjoy all the rights and privileges of commissioned officers.

4. Candidates who, for physical or other reasons, fail to meet the requirements for a commission may be appointed on a civil service basis. Such appointments are not subject to the civil service classification act and do not therefore entail the taking of an examination.

5. Candidates appointed as interns in either category will not be transferred or assigned to any other duty before they have completed their internships except for unsatisfactory performance in the internship assignment.

6. All applicants will be requested, where geographically feasible, to appear for a personal interview at one of the Marine Hospitals conducting postgraduate training.

Residency Training in Medical Specialties

Residency training programs in several of the medical specialties are offered in 8 Marine Hospitals to graduates of approved medical schools who have successfully completed at least one year in an approved internship. The policy of the service regarding residents in the Marine Hospitals is as follows:

1. Selection and appointment of applicants for residency training is made by the Residency Training Board, with due consideration to the applicant's expressed preference of hospitals where a choice exists.

2. While the service is primarily interested in training its young medical officers, a number of outside candidates will be selected each year. The latter may be commissioned in the grade for which they qualify in the Reserve Corps of the Public Health Service and will serve in an active duty status with all the rights and privileges of commissioned officers. However, those selected who for physical or other reasons do not qualify for a commission may be appointed in a civil service status.

3. Residents will not be subject to transfer to other types of duty or to other assignments before the period of training for which they are appointed has been completed except for unsatisfactory performance in the residency assignment.

4. All appointments are made for twelve month periods, beginning each July 1. Reappointments to the second and third years of residency training will be conditioned on quality of performance, as reported to the residency training board by the education committee of each hospital. Applications for original appointment must be on file in headquarters by November 1 of each year and appointments will be made not later than February 1. Application blanks may be obtained by addressing a request to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

5. Where geographically feasible, applicants will be requested to report for a personal interview at one of the Marine Hospitals conducting postgraduate training.

Residency training to begin July 1, 1948 is offered in the medical specialties indicated at the following Marine Hospitals:

Hospital	Residencies (Beginning July 1, 1948)
Staten Island........................	*Internal medicine General surgery *Orthopedic surgery Urology Dermatology and syphilology *Radiology (diagnostic) Pathology Ophthalmology and otolaryngology
Baltimore Marine Hospital..........	*Internal medicine *General surgery *Urology *Radiology *Pathology
San Francisco Marine Hospital.....	*Internal medicine *General surgery Ophthalmology and otolaryngology
New Orleans Marine Hospital.......	Internal medicine *General surgery Radiology *Pathology *Ophthalmology and otolaryngology
Seattle Marine Hospital.............	Internal medicine General surgery Ophthalmology and otolaryngology
Detroit Marine Hospital............	*General surgery
Boston Marine Hospital............	Internal medicine *General surgery
Ellis Island Marine Hospital (N.Y.)	*Psychiatry

* Indicates residency approved by Council on Medical Education and Hospitals of the American Medical Association. Application for similar approval has been made for several of the residencies not so designated.

PERSONAL

Dr. Ray H. Vanderhook has been assigned chief of the surgical service at the U. S. Public Health Service hospital, Lexington, Ky., succeeding Dr. Fred Oesterle, who has been assigned to the marine hospital at Staten Island, N. Y., to take postgraduate work in surgery.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

The Fox Foundation for Urology.—Mr. R. S. Fox of Seattle has made an initial grant of $25,000 for scientific research or educational development in the field of urology with no restrictions on the use of principal or interest for this purpose. Needy patients suffering from urologic diseases are to be given free or part pay medical and hospital service. Eventually the plan is to establish a urologic ward in one of the local hospitals. Principal office of the Fox Foundation for Urology will be at 233 North Greenleaf Avenue, Whittier. Dr. W. O. Mendenhall, former president of Whittier College, Whittier, has been named chairman of the foundation, and Dr. Franklin Farman, Whittier, the director.

Dr. Charles Nelson Honored by Sweden.—Dr. Charles F. Nelson, founder of the Nelson Clinic in Beverly Hills, will receive the Swedish insigne of the Royal Order of Vasa, First Class, from the Swedish consul at ceremonies September 12 in the Ambassador Hotel, Los Angeles. Dr. Nelson is being honored for achievements in the practice of medicine and surgery and for his medical research. Dr. Nelson graduated at Rush Medical College, Chicago, and served his internship at the Los Angeles General Hospital. At the annual session of the American Medical Association in 1940 in New York he was awarded the bronze medal for an exhibit on bone metabolism. He received the Ling medal for work for children in 1938 and the award from the California State Medical Association for physiochemical approach to the study of bone problems.

COLORADO

Appoint Clincal Director at Medical Center.—Dr. Leighton L. Anderson, director of the outpatient department at Colorado General Hospital, Denver, has been appointed to the new post of clinical director at the University of Colorado Medical Center. He will have administrative supervision of the resident and intern staff in addition to his present position at the hospital. Dr. Anderson received his medical degree at the Columbia University College of Physicians and Surgeons, New York, 1938. He served in the U. S. Army Medical Corps in the recent war.

ILLINOIS

State Society to Publish History.—The Illinois State Medical Society has appealed to veteran physicians, members of families of pioneer Illinois medical men and others who might have access to or knowledge of historical material relating to the practice of medicine in Illinois from 1850 to the present to cooperate in the society's project to publish a complete medical history of Illinois. The first volume, covering the years up to 1850, was published in 1927 with the late Dr. Lucius H. Zeuch, Chicago, as editor. The society is going ahead with plans for at least two more volumes and is issuing an appeal for any information concerning physicians, hospitals, public health, medical biography and other data of value in the history of medicine in Illinois. The society is particularly anxious to complete its files of transactions of the society printed in book form from 1850 to 1899 and hopes that persons searching old collections will report all volumes.

Chicago

Report on Tuberculosis Survey.—Over 200 cases of tuberculosis were found among 14,967 residents of Maywood and Melrose Park who were surveyed this spring (The Journal, April 12, p. 1163). The Tuberculosis Institute of Chicago and Cook County reported that about 50 per cent of the population volunteered for the x-ray examination.

Award for Film on Bronchial Tumors.—Dr. Paul H. Holinger, assistant professor of otolaryngology at the University of Illinois College of Medicine, and Dr. Ralph G. Rigby of Salt Lake City, have been named winners of the grand prize in the scientific film section at the World's Film and Fine Arts Festival to be conducted at Brussels, Belgium. Dr. Holinger and Dr. Rigby submitted the film "Bronchial Tumors," a Kodachrome movie of the bronchi taken through a bronchoscope. Dr. Rigby is a former member of the University of Illinois faculty. The prince regent of Belgium will present the prize to a representative of the state department this fall.

Hospital News.—Contracts were recently let by Mount Sinai Hospital for the erection of two additional floors, which will house 60 more patients. When completed early next spring, the new addition will give the hospital a capacity of 300 beds and 44 bassinets.——Swedish Covenant Hospital has begun construction of a $600,000 educational building and nurses' dormitories across the street from the hospital. The ground floor of the main section of the building will contain a student chapel, library and living quarters for the superintendent and administrative and household staffs, with business offices. On the second floor will be two large class rooms as well as the nursing arts, dietetics and science laboratories and nurses' training school offices. The remaining space of the five floors will provide dormatories for 125 student nurses.

INDIANA

Course for Practicing Physicians.—Indiana University School of Medicine, Bloomington-Indianapolis, is offering its annual postgraduate course for practicing physicians on the Medical Center campus during the week of October 6. Therapeutic aspects will be emphasized in the clinics, reviews and lectures in about twenty fields of interest to the general practitioner. The course is offered without tuition charge.

State Hospital Superintendent.—Dr. Charles A. Zeller, former superintendent of the Fairview State Hospital for the Criminal Insane, Scranton, Pa., has been appointed director of the Indiana Council for Mental Health and superintendent of the Madison State Hospital in Indiana. He is a graduate of the University of Buffalo School of Medicine, 1927, and held a similar position for some time at the Philadelphia Mental Hospital at Byberry.

KENTUCKY

State Medical Meeting.—The Kentucky State Medical Association will hold its annual meeting September 29 to October 2 in Louisville under the presidency of Dr. Elbert W. Jackson, Paducah. There will be a special session of the House of Delegates on September 28 to take final action on prepayment medical care plans for Kentucky. Among the subjects on the scientific program to be discussed by members of the association are the treatment of syphilis, advances in the care of acute appendicitis, chemotherapy, problems in infant feeding, medical problems in the community hospital, knock knees and bowlegs, and diseases of the eyes that general practitioners should know about. The oration in surgery will be given by Dr. J. Duffy Hancock, Louisville, on "Surgical Horizons," and the oration in medicine by Dr. Rankin C. Blount, Lexington, on "Practical Aspects of Psychosomatic Medicine." A Technicolor sound movie on cancer control is part of the Tuesday evening program. The guest speakers include Dr. Edward L. Bortz, Philadelphia; Dr. George F. Lull, Secretary and General Manager, American Medical Association, Chicago, and Rev. Alphonse M. Schwitalla, S. J., St. Louis.

MASSACHUSETTS

Public Health Conference.—The Massachusetts Public Health conference will be held at the University of Massachusetts, Amherst, September 11-12. Sponsored by the Massachusetts Public Health Association, the university and the Massachusetts Department of Public Health, the conference is intended to stimulate interest in extending protective health services to communities which lack facilities and personnel. Health officers, milk inspectors, sanitarians, nurses, physicians, health educators and other health workers throughout the state are expected to attend. Among the topics to be discussed are bringing health services to your back door, functions of health centers, unmet needs for children and combined nursing services for local communities. Special section meetings will be held for health officers, health agents, nurses and sanitarians. Reservations for overnight accommodations may be made by writing Professor Ralph L. France, Marshall Hall, University of Massachusetts, Amherst.

MINNESOTA

Dr. McIndoe Honored.—It has recently been announced from London that knighthood has been conferred on Dr. Archibald H. McIndoe for contributions in plastic surgery before and during the war in services to the state. Dr. McIndoe received his training in surgery in this country, where he was a fellow of the Mayo Foundation of the University of Minnesota from 1925 to 1930. Following this training he undertook work in England.

NEW YORK

Licenses Revoked and Suspended.—The Board of Medical Examiners of the State Education Department reports that by action taken by the Board of Regents the medical licenses of the following persons have been revoked: Ibrahim J. Abdallah, Brooklyn; Simon Bloom, New York; Nicholas E. Caputo, Brooklyn; I. Hugo Francese, New York; Mae Graziano Perez, New York; Nicholas A. Tonis, New York. The license of Hirsch L. Messman, New York, was suspended for one year beginning May 29, 1947.

Diabetic Research.—The New York Diabetes Association, Inc., has made research grants to Dr. I. Arthur Mirsky, director, May Institute for Medical Research, Jewish Hospital, Cincinnati, for studies of "The Extraction of Insulin from the Urine"; to Dr. Elaine P. Ralli, New York University College of Medicine, New York, for "Factors Influencing the Plasma Levels of Vitamin A and Carotene in Patients with Diabetes Mellitus"; to Dr. Thomas H. McGavack, New York Medical College, Flower and Fifth Avenue Hospitals, New York, for the study of "The Ketosteroids in the Male Diabetic, the Blood Potassium in Diabetic Coma and the Use of Rutin in the Treatment of Retinopathy in Diabetics," and to Albert E. Sobel, Ph.D., Brooklyn Jewish Hospital, Brooklyn, for "The Metabolism of Vitamin A in Diabetes Mellitus."

New York City

Two Hospitals Merge.—To provide Brooklyn with more coordinated medical facilities, Israel Zion Hospital and Beth Moses Hospital, both of Brooklyn, have merged under the new name Maimonides Hospital. They will continue to occupy their present quarters and carry on their present functions for a time. Future plans include an expansion of facilities of the Israel Zion Division to 577 beds, the total capacity of both hospitals. The Beth Moses Division is to be converted into an institution for care of long term clinical and nonambulatory patients, heretofore uncared for by both hospitals.

Academic Training for Hospital Physicians.—A plan for New York University College of Medicine to cooperate with rural and suburban hospitals to aid young staff physicians in postcollegiate academic training will get under way in September. Young physicians at the participating hospitals will be required to study one year at the College of Medicine after a full year of hospital work. The plan calls for monthly visits to the hospitals by members of the faculty of the College of Medicine. They will organize and participate in conferences or any other academic exercises and will aid the physicians in solving technical problems. Hospitals scheduled to participate are New Rochelle Hospital; Flushing Hospital and Dispensary, Queens; Monmouth Memorial Hospital, Long Branch, N. J.; Fitkin Memorial Hospital, Neptune, N. J.; St. Luke's Hospital, Newburgh, N. Y., and North Country Community Hospital, Glen Cove, L. I. By 1948 thirteen hospitals within 140 miles of New York are expected to enroll. The plan has been developed on a noncontractual basis, and member hospitals may withdraw support at any time.

OHIO

Establish Department of Radiology.—A new department of radiology has been established at Ohio State University College of Medicine, Columbus, with Dr. Hugh J. Means, chairman, and fourteen faculty members on the staff. The department will offer instruction in x-ray work for graduate and undergraduate medical students and opportunities for independent research. Heretofore the teaching of radiology at Ohio State has been administered in the department of surgery. Dr. Means, a graduate of the University of Pennsylvania School of Medicine, Philadelphia, has been a member of the Ohio State University faculty since 1908. He has taught radiology for thirty-three years, during which period he also has served as radiologist at University Hospital. He became professor of radiology in 1943 and director of radiology at University Hospital in 1945. Members of the department supervise the radiologic service in other hospitals in addition to University Hospital.

Western Reserve to Train Clinical Psychologists.—The U. S. Public Health Service, in accordance with the Federal Mental Act recently signed by President Truman, has made a grant of $8,232 to Western Reserve University, Cleveland, for the expansion of the training program for clinical psychologists. An agreement has also been made between the university and the Veterans Administration whereby the two agencies will conduct a training program for clinical psychologists on a cooperating basis. These arrangements were made in response to a heavy demand for clinical psychologists in hospitals and other institutions throughout the country in an effort to solve the problems of emotional and mental illness. Of the total amount of the grant, $1,200 will be used as a stipend for two graduate students for one year and the remainder to employ a full time faculty member and secretary to aid in the training program. Under the arrangement with the Veterans Administration, about 15 students will take part in studies and field work leading to a Ph.D. in clinical psychology over a period of four years, half of which time will be spent at the Veterans Hospital in Brecksville, Ohio, and the remainder at Western Reserve. The president of the university has announced the appointment of two additional men to the staff of the psychology department: Dwight W. Miles, formerly chief clinical psychologist for the Cleveland Clinic Foundation Hospital in Cleveland, and Daniel Levinson, formerly of the University of California.

PENNSYLVANIA

Annual Meeting of State Society.—The ninety-seventh annual session of the Medical Society of the State of Pennsylvania will be held in the Hotel William Penn, Pittsburgh, September 15-18, under the presidency of Dr. Howard K. Petry, Harrisburg. At the general assembly Wednesday evening Dr. Joseph D. Aronson, Wayne, will speak by invitation on "The Present Status of BCG Vaccine in the Prevention of Tuberculosis." The rest of the scientific program is divided into sections. Guest speakers on the scientific program include:

Dr. Richard H. Freyberg, New York, Practical Consideration of Management of Arthritis.
Dr. Henry M. Thomas Jr., Baltimore, Role of the Thyroid in Health and Disease.
Drs. Jonathan E. Rhoads and Charles Kirby, Philadelphia, Problems of Phlebothrombosis.
Dr. Samuel F. Marshal, Boston, Gastric Carcinoma.
Dr. James T. Priestley, Rochester, Minn., Surgical Treatment of Jejunal Ulcer.
Dr. Peter C. Kronfeld, Chicago, Reoperation for Glaucoma.
Dr. Edwin N. Broyles, Baltimore, Treatment of Carcinoma of Larynx.
Dr. Joseph A. Ritter, Philadelphia, Rose R. O'Connell and Edward Lucente, Infectious Diarrhea of the Newborn—Report of an Epidemic.
Dr. George B. Logan, Rochester, Minn., Management of Allergic Disease of the Respiratory Tract in Children.
Drs. John J. McAleese, Grace S. Gregg and Frank J. Gregg, Pittsburgh, Surgery in Congenital Heart Disease.
Dr. Mitchell I. Rubin, Buffalo, Studies on Renal Function in Childhood.
Dr. Anthony C. Cipollaro, New York, Diagnosis and Treatment of Cutaneous Cancer.
Dr. William J. Engel, Cleveland, Safety Factors in Prostatic Surgery.
Dr. Herbert E. Schmitz, Chicago, Treatment of Carcinoma of Cervix with Supervoltage X-Ray Therapy and Radium.
Dr. Edward G. Waters, Jersey City, Extraperitoneal Cesarean Section.
Dr. Howard P. Doub, Detroit, Roentgen Studies of Thoracic Tumors.
Drs. Henry F. Hunt and Samuel W. Berkheiser, Danville, Primary Carcinoma of the Liver.
Dr. Shields Warren, Boston, Effects of Atomic Bomb on Populations of Hiroshima and Nagasaki.
Dr. Wingate M. Johnson, Winston-Salem, N. C., General Practice of Medicine.
Dr. James H. Wall, White Plains, N. Y., Fundamentals of Psychiatry for General Practitioners.
Dr. Nolan D. C. Lewis, New York, Trends in Present Day Psychiatry.
Dr. Allen O. Whipple, New York, Clinical Training in Diagnosis and Treatment of Cancer.

TEXAS

Dr. Moore Named Head of Department.—Dr. Robert M. Moore, professor of surgery at the University of Texas Medical Branch, where he has been on the faculty since 1930, has been named chairman of the department of surgery. Dr. Moore received his M.D. degree from Washington University School of Medicine, St. Louis, 1926. He interned and was an assistant resident surgeon at Barnes Hospital, St. Louis, from 1927 to 1929. He was a National Research Council fellow in the department of physiology at Harvard Medical School, Boston, 1927-1929, and has been associated with the surgical department at John Sealy Hospital, Galveston, since 1930.

WEST VIRGINIA

State Silicosis Board.—Two Charleston physicians have been reappointed members of the state silicosis medical board. Dr. William C. Stewart, Charleston, was reappointed for the term expiring July 8, 1951 and Dr. George F. Grisinger, Charleston, for the term expiring July 8, 1949. Dr. Grisinger will serve as chairman of the board for the year ending July 8, 1948. Dr. William P. Elkin, Charleston, was appointed on July 8 as a member of the board to succeed Dr. Sanders G. Davidson, Bluefield. His term expires in 1953.

Tuberculosis Association Meeting.—The annual meeting of the West Virginia Tuberculosis and Health Association will be held September 17-18 at the Daniel Boone Hotel, Charleston. There will be conferences of full time county secretaries Thursday morning, a demonstration workshop in the afternoon and demonstration of a diagnostic clinic by the control staff of the bureau of tuberculosis of the state health department. Dr. James R. Reuling, president of the National Tuberculosis Association, will be the speaker at the annual banquet. A general program session and the annual luncheon will be held Friday.

GENERAL

Italian Sausages Seized at Port.—Federal inspectors seized nearly 3,000 pounds of prepared meats from the luggage of 1,393 passengers arriving in New York, July 28, aboard the Italian liner *Saturnia.* Under a new ruling that all meats in the country must be hermetically sealed to prevent spread of hoof and mouth disease the meats, mostly Italian sausages, were taken from passengers who had been given a presailing warning.

Increase in Death Rate from Leukemia.—The Metropolitan Life Insurance Company, New York, reports that leukemia takes more than 6,000 lives annually in the United States, many of them among children. The death rate reported from leukemia is said to have more than doubled in twenty-five years and is more than five times that of infantile paralysis, about one and one-half times that of measles, scarlet fever, whooping cough and diabetes combined, and almost equal to that of appendicitis.

Dr. Jirasek to Visit United States.—During September and October Dr. Arnold Jirasek, head of the first surgical clinic of Charles University, Prague, and chairman of the department of surgery for twenty years, will visit the chief neurosurgical centers of the East and Middle West and Canada under the auspices of the Rockefeller Foundation. He is president of the Czechoslovakian surgical society, a member of the Academy of Surgery of Paris, the International Society of Surgeons, of which he was first president, and the North American Postgraduate Assembly.

Tuberculosis Conference.—The Mississippi Valley Conference on Tuberculosis, under the presidency of Dr. J. Arthur Myers, Minneapolis, and the Mississippi Valley Trudeau Society, under the presidency of Dr. John H. Skavlem, Cincinnati, are meeting jointly September 8-10 at the Edgewater Beach Hotel, Chicago. Subjects to be discussed are the Christmas Seal Sale, Organization for Education and Follow-Up in Community Wide X-Ray Programs, and Social and Economic Needs. A streptomycin symposium will be held Tuesday at 2 p. m. and an x-ray conference at 8: 30 that evening. Other papers also will be presented.

Medical and Surgical Relief Committee Reorganizes.—The Medical and Surgical Relief Committee, New York, is now in process of reorganization under the chairmanship of Admiral William F. Halsey. The committee organized in 1940 for equipping British emergency stations and field hospitals with medical and surgical supplies. Approximately fifty physicians and surgeons responded, and a working organization was set up in New York City. When it soon became evident that other countries needed supplies, the committee's inventory was placed at the disposal of the American Red Cross, the Office of Civilian Defense and hospitals in North, Central and South America and American possessions.

Credit for Work in the Armed Forces.—The American Board of Psychiatry and Neurology wishes to point out that in order to avoid misunderstanding regarding the allowance of one year of training credit for work in the armed forces during wartime it should be noted that wartime to the board means V-J day plus six months. Therefore, men who entered the service on V-J day would be allowed six months' credit. Men who entered the armed forces after February 1946 will not be granted credit toward the training requirements unless they were residents in hospitals approved by this board for residency training. If they have practiced psychiatry or neurology during this time, however, it is probable that this will be counted toward the experience requirements.

Acting Medical Director of American Cancer Society.—Dr. Charles S. Cameron has been appointed acting medical and scientific director of the American Cancer Society following the resignation of Dr. Ashley W. Oughterson, New York, who had served since April 1946. Dr. Cameron came to the society in June 1946 as assistant medical and scientific director and in January also assumed the duties as director of the service department. A graduate of Hahnemann Medical College and Hospital, Philadelphia, 1935, he served on the resident staff for four years at Memorial Hospital in New York before going into the service. In addition to overseas assignments with the naval medical corps he was stationed at Brooklyn Naval Hospital as chief of tumor service.

Mississippi Valley Meeting.—The twelfth annual meeting of the Mississippi Valley Medical Society will be held in the Municipal Auditorium, Burlington, Iowa, October 1-3 under the presidency of Dr. Walter A. Sternberg, Mount Pleasant, Iowa. On October 1 an all St. Louis program will be presented. October 2 the speakers include the President of the American Medical Association and presidents of the Illinois, Iowa and Missouri state medical societies. The afternoon program will be presentations by a group from the State University of Iowa College of Medicine, Iowa City. October 3 will feature an all Chicago program with a number of well known clinical teachers. There will be no registration fee. Information may be secured from Harold Swanberg, M.D., Secretary, 209-224 W. C. U. Building, Quincy, Ill.

New Pediatric Journal.—The American Academy of Pediatrics will publish a new monthly journal called *Pediatrics* beginning in January 1948 containing original articles on clinical pediatrics, nutrition, genetics, preventive medicine, psychology, nursing and medical sociology, education and social welfare of children. A special section will be devoted to Latin American countries, where the academy has a program in operation. Abstracts of all original articles will be published in Spanish. Matters of interest in Congress, government departments and agencies in Washington will be reported. Communications of an editorial nature should be addressed to the editor in chief, Hugh McCulloch, M.D., 325 North Euclid Avenue, St. Louis 8. Advertising matters and subscriptions should be sent to Charles C Thomas, publisher, 301-327 East Lawrence Avenue, Springfield, Ill.

Prevalence of Poliomyeltis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

Division and State	Week Ended			Total to		Total *	
	Aug. 16, 1947	Aug. 17, 1946	Median, 1942-1946	Aug. 16, 1947	Aug. 17, 1946	March 16-Aug. 16, 1947	March 17-Aug. 17, 1946
New England:							
Maine	2	3	0	9	9	6	9
New Hampshire	1	16	1	7	63	3	62
Vermont	1	3	2	12	13	4	9
Massachusetts	14	14	14	58	46	51	42
Rhode Island	11	7	0	47	10	46	10
Connecticut	9	4	13	26	34	23	26
Middle Atlantic:							
New York	30	57	57	191	350	155	317
New Jersey	11	19	19	48	91	42	85
Pennsylvania	19	19	19	96	93	82	81
East North Central:							
Ohio	22	48	15	103	228	93	213
Indiana	5	18	16	40	87	24	82
Illinois	54	204	77	178	662	156	654
Michigan	25	70	12	101	237	77	229
Wisconsin	2	48	3	36	151	12	138
West North Central:							
Minnesota	13	366	14	66	1,349	53	1,348
Iowa	15	40	8	55	211	47	202
Missouri	1	105	10	42	383	32	376
North Dakota	5	48	2	36	121	31	121
South Dakota	0	28	0	3	145	1	145
Nebraska	10	35	5	86	184	79	183
Kansas	5	73	7	41	353	23	349
South Atlantic:							
Delaware	12	0	2	24	5	24	5
Maryland	6	6	6	26	27	20	25
District of Columbia	2	2	2	5	6	3	5
Virginia	12	9	9	45	49	35	43
West Virginia	9	9	6	23	32	19	29
North Carolina	7	6	1	45	56	30	49
South Carolina	1	1	1	10	18	9	15
Georgia	1	4	3	35	87	28	79
Florida	2	18	3	59	426	34	377
East South Central:							
Kentucky	2	6	10	22	57	21	54
Tennessee	0	10	5	40	66	28	57
Alabama	1	23	7	28	267	15	264
Mississippi	0	31	3	23	157	6	140
West South Central:							
Arkansas	9	25	6	43	163	32	151
Louisiana	0	22	6	41	208	23	189
Oklahoma	7	35	18	32	206	21	200
Texas	6	49	49	118	630	93	602
Mountain:							
Montana	4	7	0	11	55	9	39
Idaho	18	3	1	56	9	46	9
Wyoming	3	11	0	10	49	7	48
Colorado	5	82	7	32	424	27	423
New Mexico	0	16	1	11	68	8	67
Arizona	1	16	3	17	59	14	56
Utah	0	9	8	7	36	2	30
Nevada	0	0	0	0	3	0	3
Pacific:							
Washington	15	27	20	58	133	50	100
Oregon	5	12	11	28	47	23	43
California	28	152	25	514	678	365	591
Total	411	1,816	...	2,644	†8,841	2,032	8,374
Median, 1942-46	...	....	747	4,308		3,911	

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* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).

† Figures changed by corrected reports.

Deaths

M. Herbert Barker ⊕ Chicago; born in Villisca, Iowa, Aug. 20, 1899; Rush Medical College, Chicago, 1926; master of science in physiology at Northwestern University in 1930; associate professor of medicine and in charge of the cardiorenal vascular disease clinic and laboratory at Northwestern University Medical School; specialist certified by the American Board of Internal Medicine; interned at the Wesley Memorial Hospital; at one time resident at the Peter Bent Brigham Hospital and at Children's Hospital, Boston; on the attending staff of the Passavant Memorial Hospital, Chicago; member of the American Medical Association, Chicago Society of Internal Medicine, Central Society of Clinical Research, Central Clinical Research Club and the Chicago Society of Medical History; chairman of the peripheral vascular section of the American Heart Association; founding member of the American Society for the Study of Arteriosclerosis; fellow of the American College of Physicians; at one time consultant in cardiorenal disease at the Veterans Diagnostic Center, Edward Hines Hospital; member of the advisory counsel of the Illinois State Pneumonia Control Board; chairman of the Committee for Nomenclature of Renal Vascular Disease; regional consultant for the Surgeon General of the Army; entered the medical corps, Army of the United States, as a lieutenant colonel in February 1942; sent overseas in December 1942; later promoted to colonel; consultant for the Allied Forces in the Mediterranean theater; in 1945 was awarded the Legion of Merit for his work on infectious hepatitis; enlisted as a private in the Marine Corps in 1918; died while visiting patients at the Passavant Memorial Hospital, August 14, aged 47, of ruptured congenital cerebral aneurysm.

Marcus Neustaedter, New York; born in Austria in 1871; Bellevue Hospital Medical College, New York, 1896; received Ph.D. from New York University in 1906; member of the American Medical Association, New York Academy of Medicine, New York Neurological Society and the Society for Research in Neurology; formerly clinical professor of neurology at the New York Polyclinic Medical School and Hospital; served as instructor and lecturer in neurology from 1906 to 1920 and later clinical neurologist at the University and Bellevue Hospital Medical College; for many years visiting neurologic director of service and president of the medical board of the Central Neurological Hospital of Welfare Island; since 1925 consulting neurologist of the New York Cancer Institute; formerly on the staff of the Kings County Hospital in Brooklyn and St. Mark's Hospital; member of the appeal board of the medical corps during World War I; author of numerous papers on [illegible] encephalitis and a "Textbook of [illegible] ents and Practitioners"; died in [illegible] Hospital June 17, aged 76, of heart disease.

James Robert Judd ⊕ Honolulu, Hawaii; born in Honolulu May 20, 1876; Columbia University College of Physicians and Surgeons, New York, 1901; member of the Pacific Coast Surgical Association; fellow of the American College of Surgeons; past president of the Hawaii Territorial Medical Society and vice president of the Pan-Pacific Surgical Association; formerly member of the board of health; assistant to the American National Red Cross during the Spanish-American War; received the Legion of Honor from the French government in 1920 for his work with the American Ambulance Corps in France in 1915 and 1916; chief of the surgical staff of Queen's Hospital; died June 2, aged 71.

Benjamin G. Argabrite, Greenville, Ky.; University of Louisville Medical Department, 1907; veteran of the Spanish-American War; died June 9, aged 71, of coronary thrombosis.

James Harold Beckley ⊕ Nanticoke, Pa.; Jefferson Medical College of Philadelphia, 1926; member of the school board; served on the staffs of the Wilkes-Barre (Pa.) General Hospital and the Nanticoke (Pa.) State Hospital; served for a short time as a captain in the medical corps, Army of the United States, during World War II; died in Hunloch Creek June 1, aged 44, of coronary embolism and acute myocarditis.

Ivan Estle Bennett, Elgin, Ore.; University of Oregon Medical School, Portland, 1931; member of the American Medical Association; died May 15, aged 45.

Charles A. Boterf, Hartford, Kan.; University Medical College of Kansas City, Mo., 1907; died May 17, aged 80, of heart disease.

Andrew J. Byerly, Hornick, Iowa; State University of Iowa College of Medicine, Iowa City, 1887; served as mayor; affiliated with the Methodist and St. Joseph's hospitals in Sioux City; died June 3, aged 86.

Ovide Toussaint Charron, New Bedford, Mass.; College of Physicians and Surgeons, Boston, 1912; served as city physician; affiliated with the Acushnet and Union hospitals; died May 26, aged 64, of angina pectoris.

Charles Michael Collins, Providence, R. I.; University of Maryland School of Medicine, Baltimore, 1910; served during World War I; formerly on the staff of St. Joseph's Hospital; died in the Veterans Hospital in Bedford, Mass., May 8, aged 63.

Frank Augustus Cowles, Beverly, Mass.; University of the City of New York Medical Department, 1881; served as city physician and on the staff of the Beverly Hospital; died May 21, aged 87.

George G. Craig, Rock Island, Ill.; Northwestern University Medical School, Chicago, 1898; member of the American Medical Association; died May 26, aged 71.

Charles Elbert Davis, Los Angeles; Northwestern University Medical School, Chicago, 1898; served during World War I; died May 17, aged 71.

Charles August Dettman, Wallace, Idaho; Milwaukee Medical College, 1905; died April 22, aged 67.

Stanley Randolph Milward Gordon, Kingston, Jamaica, B. W. I.; Howard University College of Medicine, Washington, D. C., 1928; served during World War I; assistant surgeon at the Kingston Hospital; died in St. Andrew June 24, aged 56, of myocarditis and hypertension.

Charles Edward Harris, Hyannis, Mass.; Baltimore Medical College, 1897; member of the American Medical Association; served during World War I; captain, medical reserve corps, not on active duty; past president of the Hyannis Free Public Library Association; affiliated with the Cape Cod Hospital, where he died May 21, aged 78

Edwin W. Janes ⊕ Tacoma, Wash.; University of Buffalo School of Medicine, 1898; member of the North Pacific Society of Internal Medicine; at one time city health director; past president of the Pierce County Medical Society; served during World War I; consulting physician at the Veterans Administration Hospital in American Lake; died May 27, aged 73.

Charles Willard Lynn, Hollis, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1899; formerly a member of the New York City Health Department, which he served first as a school medical inspector and then as assistant registrar of records in Queens County; served during World War I; died in Bradenton, Fla., June 3, aged 68, of coronary thrombosis and arteriosclerosis.

Charles Wesley More ⊕ Eveleth, Minn.; Chicago Medical College, 1888; fellow of the American College of Surgeons; served as a member of the state board of health, library board and school board; formerly health officer; member of the draft board during World War I; active in the Minnesota State Hospital Association; for many years owned the More Hospital; died June 1, aged 86, of cerebral hemorrhage.

Ernest Alfred Purnell ⊕ Granite City, Ill.; University of Michigan Homeopathic Medical School, Ann Arbor, 1909; served during World War I; on the staff of St. Elizabeth Hospital; died May 30, aged 61, of coronary thrombosis.

Josef Adam Radzievich, Minersville, Pa.; Georgetown University School of Medicine, Washington, D. C., 1931; member of the American Medical Association; on the staff of the A. C. Milliken Hospital in Pottsville; died in the Graduate Hospital of the University of Pennsylvania in Philadelphia, May 27, aged 43.

Albert Adam Ripperger, New York; Ludwig-Maximilians-Universität Medizinische Fakultät, Munich, Bavaria, Germany, 1893; died May 21, aged 85.

John Bartlett Ross, Chicago; Dearborn Medical College, Chicago, 1905; member of the American Medical Association; affiliated with the American Hospital, where he died June 4, aged 76, of papilloma of the bladder.

Franklin William Shaffer, Colorado Springs, Colo.; (licensed in Kansas in 1901); died May 13, aged 76.

Claude Gibony Spears, Altus, Okla.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1902; member of the American Medical Association; for many years county health officer; served as a member of the city council; died May 21, aged 73, of coronary occlusion.

George Reed Tabor, Tishomingo, Okla.; Louisville (Ky.) Medical College, 1888; member of the American Medical Association; formerly state health officer of Texas and on the faculty of the Baylor University College of Medicine in Dallas; at one time surgeon general of the Texas National Guard; died May 19, aged 82, of heart disease.

Foreign Letters

LONDON

(*From Our Regular Correspondent*)

July 19, 1947.

General Practitioner Obstetricians

Whatever views are held about the National Health Service, one thing cannot be disputed: it will mean revolutionary changes in the practice of medicine. A striking example is the institution of a new order of practitioners with the new designation "general practitioner obstetricians." In a circular issued by the Ministry of Health it is announced that the maternity hospitals and homes now maintained by many welfare authorities will be transferred to the minister of health; specialist services will be made available by the regional hospital boards, and the services of a family doctor will be available to every expecting or nursing mother, as well as to every child. The minister proposes that certain medical practitioners in each district shall be selected to practice midwifery and called "general practitioner obstetricians." Every general practitioner will be given an opportunity to say whether or not he desires to practice midwifery under the act and to answer calls by midwives for medical aid. The experience of the practitioners who desire to do so will be reviewed by a local *ad hoc* committee of a wholly professional character, consisting of local general practitioners, a consulting obstetrician and the local health officer. This committee will draw up a list of local approved practitioners and will be entitled to indicate to those not accepted the need for further obstetric experience. The list will be reviewed from time to time to ensure that doctors on it are continuing to undertake enough midwifery to remain competent in practice and to add the names of future entrants to the profession as they acquire the necessary experience. The duty of a family doctor, when consulted by a woman who is pregnant, will be to see that she knows how to obtain the services of a midwife and, if he himself is not on the local approved list, to help the woman to choose a "general practitioner" from the approved list who will give her the necessary antepartum and postpartum care and will be present, if he thinks it necessary, or is called by the midwife, at the confinement. An inclusive fee for general practitioner obstetricians additional to that payable for other general medical services will be centrally negotiated with the profession. The general practitioner obstetricians, with the selected officers of the local health authority, the midwives and a consultant obstetrician, will form composite teams in each area. In time the general practitioner obstetricians will no doubt provide the bulk, if not the whole, of the medical staff for the local health authority's antepartum clinics, at which consultative clinics will also be held by the specialist obstetricians.

Incidence of Venereal Disease in the Army

When the second reading of the National Service Bill, which imposes conscription for the armed forces, was moved in the House of Lords the discussion was confined to the incidence of venereal disease in the army. The archbishop of York referred to the temptation to which young soldiers serving in Germany were exposed. In the British zone there were several million young women in excess of the number of men. Some of them, because of the circumstances of the Hitler régime, were oversexed. He pleaded that conscripts should be kept in England a considerable time before being sent to Germany. Lord Moran, president of the Royal College of Physicians, gave alarming figures of the incidence of venereal disease in the army. In September last for every thousand men in our army in Japan 228 had venereal disease. In the army in Germany the figure was 185, in Austria and Italy 168, in Burma and Malay 141. In the Middle East the figure was only 31, but this was due to the fact that there was really no mixing between the army and the civil population. For the army at home the figure was 33 per thousand. That was much higher than usual; it was generally in the neighborhood of 12. In the civil population the figure for syphilis worked out about 5 or 6 per thousand. The same prevalence of venereal disease existed in 1919 after the first world war. Then the figure was 150 out of every thousand in the army of the Rhine, while in the American army in September of that year, of all the white American troops in Germany and France, 859 out of every thousand had venereal disease. He quoted from volume xv of Medical and Casualty Statistics. Absence from home was the factor which led to this high incidence. The longer a conscript was away, the higher the incidence of venereal disease. These figures lent no support to the prime minister's idea that the army was a people's university.

For the government Lord Nathan said he was staggered at Lord Moran's figures and questioned them. The highest figure for the United Kingdom forces in the third quarter of 1946 was 9.6 per thousand. In the British army on the Rhine the highest figure was in the third quarter of 1946, 44.6 per thousand. Lord Moran replied that he had quoted from official reports. The discrepancy appeared to be due to the fact that he had given an annual rate while Lord Nathan gave a quarterly one. His figure of 228 meant that number on an annual rate. His figures had been given by the army medical department.

Toxicologic Investigation After 177 Years: The Death of Chatterton

A discovery throwing fresh light on the death of the boy poet Thomas Chatterton has been made after a hundred and seventy-seven years by Dr. H. J. Walls, staff chemist of the government forensic science laboratory of the southwest region. This boy, whom posterity has pronounced a genius, committed suicide by taking arsenic on Aug. 24, 1770, at the age of 17 years. He was penniless and starving because his literary efforts were so ill rewarded. In the Bristol Museum was the pocketbook found in his possession at the time of his death. On the book was a large stain running through six or seven pages. This on analysis has been definitely identified as opium, confirming the belief that Chatterton took the drug to alleviate his suffering, either before or immediately after taking the arsenic. Thus, in the words of Dr. Garnett, was destroyed "the most extraordinary literary phenomenon that the world ever saw."

Problem Girls

A joint committee of the British Medical Association and the Magistrates Association has issued a report on their investigation of "problem girls"—girls usually between the ages of 13 and 17 who appear before the courts on charges of stealing or because they are beyond control, in moral danger, or in need of protection or care. Superficially they may be described as "good time girls"—living only for their own enjoyment, morally and emotionally unstable, perhaps guilty of sexual misbehavior and unamenable to discipline and control. They present a serious social problem which is far from satisfactorily handled. Investigation reveals that usually their misbehavior is the result of interaction between temperament and environment, but always at the root is some defect of character. The war must take its share of responsibility. Evacuation from home and sleeping in shelters may often have provided temptations. But there has also been a slackening of adult moral standards. The committee finds that the present methods of handling these cases is more likely to increase than diminish the tendency toward misconduct. There must be fuller recognition of the nature and causes of misbehavior and the objects of treatment, more facilities and skilled staff for investigation and treatment and more clinics and institutions for treatment.

Wild Animals and the Control of Disease

Africa is presenting, by reason of its wild animals, special health problems. Nearly half the continent was represented at a conference on fauna of the British dominion and colonial territories. The effect of the method used for exterminating the fly Glossina morsitans, the carrier of Rhodesian sleeping sickness, by eradication of the large fauna on which the fly preys came under criticism, because this did not eliminate other species which had an equal or greater importance. The method of fly destruction should therefore be tested under more varied conditions. It was thought that alternative and better methods might emerge from present experiments, including bush clearing and the large scale use of insecticides. In any event the destruction of game should be undertaken by experts. In view of the part played by wild animals in spreading disease, the conference favored veterinary control of game areas. Biologists should be appointed to game departments. In view of the importance of carnivora in maintaining the balance of nature, the conference agreed that protection of the lion, the leopard and the cheetah should be given early consideration.

Increase of Infantile Paralysis

A serious increase in the number of cases of infantile paralysis has taken place. Since the beginning of the year up to July 5, 435 cases have been reported in England and Wales, as compared with 206 in the same period of 1946. For the week ended July 12, 110 new cases were reported, bringing the total since the beginning of the year up to 545. In the same period of last year the total was 218. In London there are 21 cases in hospitals. In Lewisham, a borough in the southeast of the metropolis, swimming galas have been canceled because of 9 cases, 2 of which were fatal. At Watford, a town near London, a woman aged 25, recently demobilized from the army, has died from the disease after being a week in a respirator. Other fatal cases are reported from various parts of the country.

$200,000 for Hematologic Research

The Nuffield Trust has offered $200,000 to the University of Oxford to be paid over a period of ten years to meet the capital and maintenance costs of a hematologic research unit. This will be established in the medical school in conjunction with the Nuffield Department of Clinical Medicine and the Radcliffe Department of Pathology.

ITALY

(From Our Regular Correspondent)

Florence, April 30, 1947.

Problems with the Mutual Assistance Funds

There is going on among the physicians in Italy some agitation against the mutual assistance funds for diseases with regard to the renewal of the agreements. The physicians would like to have the regulations modified and improved and more adequate prices agreed to. In addition there was the project of making the insurance service for occupational disease which has a definitely social character an obligatory one for the health officers in general and for the municipal physicians in particular.

The agreements which expired on Dec. 31, 1946 were denounced for the entire country by the medical ranks and by the health associations, which reserved for themselves complete liberty of action beginning Jan. 1, 1947. Attempts were initiated to dispose of the differences between the provincial ranks of the physicians and the National Institute of Assistance for Occupational Diseases, on which the mutual assistance funds depend, but satisfactory agreements were reached only in a few Italian provinces, while in others, and they are the great majority, the discussions have become constantly more violent.

The president of the federation of the medical ranks who intervened with the assistance of the High Commissary for Hygiene and Public Health succeeded so far that the project concerning the obligatory social service of the physicians will be submitted to examination by the legislative assembly.

After various vicissitudes a commission was nominated with the undersecretary of state for the minister of labor as chairman and with delegates from the interested parties. The commission approved some principles, among them free choice of physician, with the agreement that the ranks will compile an appropriate index of physicians who will join liberally the mutualistic service. Furthermore, it was decided that the crop sharing farmers will be considered private clients in the expectation that new laws will settle the particular position of these laborers. The problem of the crop sharing farmers was of considerable interest to some federations of physicians in northern Italy, and particularly in the province of Piedmont. During the year 1947 there will be no verification of any new category of persons entitled to mutual assistance.

After earnest discussions as to new rates of compensation an agreement was reached with regard to the maximum, which on the average was settled as 160 lire per person and for every visit, while the tariff of 1940 for ambulatory patients was raised ten times. This modus vivendi was established by the commission for the entire year 1947 but was regarded with distrust and little satisfaction by many Italian physicians, who consider such agreements only as a truce in the expectation of new battles.

Influence of the War on Maternity

At a meeting of the Società Triveneta di Ostetricia e Ginecologia, Professor A. Martinelli presented observations and statistics from the obstetric school of Verona on the effect of the war period on maternity. During the war the median weight of the fetus at term was 0.3 per cent lower than that of the prewar period. There was a mild increase in the number of premature births and of abortions. The mortality of the newborn increased also during the last five year period, while toxicosis of pregnancy and eclampsia were definitely reduced, as they were according to observations during World War I. There were no changes in dystocia, while the morbidity of the puerperium was increased. The maternal mortality was reduced. The birth rate was reduced in some communities during the war, as for instance in Verona, where the natality was less than half of the prewar natality.

Dr. De Marchi and Dr. Barazzueli have studied likewise the effect of the war on reproduction. Considering the behavior of the median weight of newborn infants from physiologic pregnancies at the obstetric-gynecologic clinic of the University of Padua during the last decade, the speakers demonstrated that the yearly median weight had decreased progressively during the last five years with values of 3,325 Gm. in 1940 to values of 3,190 Gm. in 1944. They investigated such other factors as the sex of the newborn, the age of the mothers and the civil state of the mothers. The speakers showed that in 1940 the values of the yearly median weight of the fetus reached 3,524 Gm. in multiparas, 3,377 Gm. in primiparas, 3,591 Gm. in the married, 3,388 Gm. in the unmarried, 3,538 Gm. in the male, 3,400 Gm. in the female, 3,441 Gm. in mothers between the ages of 15 to 30 years, 3,518 Gm. in mothers between the ages of 31 to 40 years and 3,540 Gm. in mothers over 40 years of age. Since 1940 all the corresponding values have decreased and the minimum weight during the years 1944 to 1945 revealed an average decrease of 5.09 per cent. The conclusions drawn from these studies on fluctuations of the weight of the fetus are as follows: Since all the factors examined show a uniform behavior, the phenomenon of the reduction of the median weight of the fetus during the last quinquennium must be due to specific causes such as undernourishment, physical and psychic trauma and in general the privations associated with war.

ANKARA

(From Our Regular Correspondent)

June 21, 1947.

Recurrence of Relapsing Fever

For about twenty years there have been no cases of relapsing fever in Turkey, but in November and December 1946 isolated cases of recurrent fever occurred in the southeastern province of Diyarbakir. Immediate preventive measures held the incidence to 20, 17 being among civilian refugees coming from Persia and 3 among the army.

The Ministry of Health immediately ordered physical examination of all people coming from that area and blood examination of all suspects. Prof. Dr. Tevfik Saglam of the Istanbul University, an authority on relapsing fever in Turkey, made it the subject of a lecture to the interns and students of the third medical clinic.

After a general review of the character of the disease, the professor, who had been chief medical officer of the third Turkish army at the Caucasian frontier during the first world war, told of his experience and observations with regard to the relapsing fever epidemic that had already made its appearance at the beginning of the war. The only statistics available for the first few months are these:

	Cases	Deaths
November 1914	38	2
December 1914	167	72
January 1915	223	121

The professor is of the opinion that these figures are much too low, since 2,102 cases of relapsing fever with a fatality rate of 29 per cent had come to his personal attention in March 1915. All these cases were of the louse borne type caused by Spirocheta obermeieri and responded to treatment with neoarsphenamine. Preventive measures had little effect at first. The epidemics reached their peak in 1915. Rigorous preventive measures brought the outbreak down gradually during the following years. The relapsing fever figures for the third Turkish army, Caucasian front, are as follows:

	Cases	Deaths	Fatality Rate, per Cent
1915 (10 months)	16,600	4,678	28.2
1916	8,382	1,592	18.9
1917	3,821	453	11.9
1918 (9 months)	1,095	50	4.5
43 months	29,898	6,773	22.3

Of all hospitalized army members during the forty-three months of the first world war relapsing fever represented a ratio of 4.7 per cent, with a death rate of 6.04 per cent. However, all other Turkish armies from the first to the ninth were equally affected on all fronts, the incidence being:

	Cases	Deaths	Fatality Rate, per Cent
1914	1,595	236	14.8
1915	27,511	6,479	23.9
1916	25,520	4,508	17.6
1917	18,808	2,477	13.1
1918	15,081	1,637	10.8
	88,515	15,337	17.3

During the war of independence, relapsing fever epidemics also affected the armies, the figures for this period being:

	Cases	Deaths	Fatality Rate, per Cent
1920	325	3	0.9
1921	2,268	71	3.1
1922	3,905	202	5.6
1923	114	2	1.7
	6,612	278	4.1

During this period relapsing fever represents a ratio of 5.6 per cent, with a death rate of 6.2 per cent.

Professor Saglam gave a survey of epidemics in other parts of the world, discussed the different forms of the disease and its vectors, and in conclusion stressed early preventive measures, early diagnosis and early treatment.

MADRID

(From Our Regular Correspondent)

July 12, 1947.

The Progressive Anoxia Test

Dr. J. Fernández Noguera, head, Metabolimetry and Spirometry Department, Madrid Faculty of Medicine, and assistant professor of endocrinology in the university chair of Professor Marañon, has done some interesting work. He previously worked on the problem of gas reexchanges and on the function of the lungs during periods of fasting (*Rev. clin. española* 8:398, 1943), observing that underfed patients in Madrid suffered from a deficient saturation of arterial blood with oxygen.

In 1945 he reported a technic for the functional examination of the oxygen system (Breathing in Rarefied Atmospheres: Its Application as a Functional Test, *Revista española de tuberculosis* **14**:447 [July] 1945). The object was to find a simple test which would show the adaptation capacity of the respiratory system. The technic which he suggested consists in having the patient breathe an atmosphere the partial oxygen tension of which is gradually rarefied so that in seven to ten minutes he reaches critical figures at which hematosis cannot be normally verified (the oxygen level, as a general rule, in healthy subjects, corresponding to 50 to 80 mm. of mercury).

During the test the oxygen percentage and partial tension are known at every moment and the following data are recorded from minute to minute: the depth and frequency of breathing, the oxygen consumption, the pulse frequency and tension, the electrocardiogram and the appearance of dyspnea and anoxemia; when the last-named symptom appears or cyanosis begins, the test is considered ended.

In practice the author uses a Knipping spirograph specially adapted for the purpose (although the test can, without difficulty, be carried out with other apparatus) combining pump circulation, absence of valves and rapid and sure absorption of carbon anhydride.

The test has given satisfactory results in clinical practice and is free from danger if carefully handled, avoiding, particularly in cardiac patients, the setting up of critical tensions surpassing the reserve strength of the circulation and breathing.

Use of the test on a series of healthy subjects of both sexes has given sufficiently concurrent results to serve as references for the classification of pathologic cases (*Boletin d. Inst. de patol. med.* **1**:104, 1946).

At the suggestion of Dr. Marañon, the test was used in a series of hyperthyroid and hypothyroid cases. The matter had already been noted by other authors in clinical practice and also in experiments on animals (Du Quervain, Asher, Binet), but no other technic had made a quantitative evaluation of this phenomenon. The results as reported by the author before the Institute of Medical Pathology directed by Professor Marañon in the Madrid General Hospital, and published in volume 7 of the *Trabajos del Instituto Nacional de Ciencias Medicas*, show that, while in thyrotoxicosis there is intolerance of anoxia, in hypothyroidism the contrary occurs and high grades of anoxemia can be reached with hardly any reaction, either subjective or objective, being produced.

Although there is some relation between this abnormal reaction and the degree of basal metabolism deviation, this is also a somewhat specific fact which enables one to draw clinical conclusions, for the author has had occasion to appreciate that several patients with very low metabolism not due to thyroid trouble behaved during the test in a very different way from those with hypothyroidism. Recently in an 11 year old child suffering from ichthyosis, whose basal metabolism was —22 per cent and whose condition did not yield to thyroidin, a diagnosis of hypothyroidism could almost certainly be discarded (although certain clinical aspects of the case led to a suspicion of this condition) owing to the child's intolerance of progressive anoxia. Various practical applications of this test have been made.

Correspondence

THE LARGEST ORGAN

To the Editor:—In the article entitled "Modern Physiologic Concepts: Their Application to the Treatment of Diseases of the Liver," in The Journal June 14, Dr. James F. Weir states "The liver, which is the largest organ in the body . . ." This is erroneous.

An organ is defined as any part of the body having a special function. With this definition, at least one organ, the brain, is just about equal to the liver in weight and at least one other, the skin, is much larger. If we include still other systemized tissues such as bone, muscle and blood, the order of size of organs in weight becomes (1) skeleton, (2) musculature, (3) blood, (4) skin, (5 and 6) liver, brain. Perhaps the skeleton, musculature and blood are not commonly thought of as organs, although there are no good reasons why they should not be so considered, but certainly the skin, liver and brain are entirely comparable.

The average weight of the human liver is 1,200 to 1,600 Gm. The average weight of the human brain is 1,360 Gm. The average weight of the skin is between two and three times greater than either. The weight of the skin cannot be derived exactly by dissection and the use of scales as can be done for the other organs, but it *can* be computed. The result of computation is approximate, but since the answer is double to treble the figures with which it is to be compared and since the margin of error is much less than twice or thrice, the conclusion is valid.

The formulas and calculations for the weight of the skin are as follows:

Area of skin in sq. cm. = (Body weight in Kg.) $^{0.425}$ × (Height in cm.) $^{0.725}$ × 71.84
Volume of skin in cc. = Area of skin in sq. cm. × Thickness in cm.
Weight of skin in Gm. = Volume in cc. × Specific gravity of skin

Solving these simple equations with use of average values yields results of these magnitudes:

Area of the human skin = 16,000 to 18,500 sq. cm.
Volume of the human skin = 2,400 to 2,800 cc.
Weight of the human skin = 3,000 to 3,500 Gm.

Morris Leider, M.D., Brooklyn.

STANDARD GELATINS AVAILABLE FOR EXPERIMENTAL USE

To the Editor:—Much experimental work has been performed with gelatins of unknown or unspecified properties. This has detracted from the value of the investigations, since the work could not be duplicated or extended, owing to the inability to procure gelatin with identical physicochemical or biochemical characteristics.

Two commercial types of gelatin are available, depending on the process by which different sources of collagen are treated for conversion into gelatin. Type A is made from an acid treated precursor (usually porkskin) and possesses a normal p_H of 3.8 to 4.5 and an isoelectric point in the range of p_H 7.0 to 8.3. Type B is made from an alkali (lime) treated precursor (usually bone-ossein or calfskin) and possesses a normal p_H of 5.0 to 7.0 and an isoelectric point in the range of p_H 4.7 to 5.0.

Physicochemical qualities such as swelling, stabilizing and chemical combination vary with the properties. Biochemical properties will depend in addition on the technic of preparing any particular types of gelatin. For example, antigenicity, nonpyrogenicity, degree of sterility or biologic tolerance are factors which must be controlled and tested for in each specific lot as it is produced.

The Edible Gelatin Manufacturers' Research Society will furnish samples together with complete information and specifications relating to any particular problem. It will endeavor through member organizations and laboratories to help with the characterization of any gelatin preparation which may need to be duplicated in the interest of research and development studies.

The following types of gelatin are available:

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Type B, graded by gel strength as specified.
Type A (special), nonantigenic, nonpyrogenic.
Type B (special), nonantigenic, nonpyrogenic.
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Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in The Journal Aug. 9, page 1262.

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I and II.* Various centers, Sept. 15-17. *Part III.* Durham, N. C., Oct. 21-23. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Part II. *Oral.* Cleveland, Oct. 5-11. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

American Board of Dermatology and Syphilology: *Part II. Written.* Various centers, Sept. 15. Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

American Board of Internal Medicine: *Oral.* Chicago, Oct. 8-10. Asst. Sec., Dr. W. A. Werrell, 1 West Main St., Madison 3.

American Board of Neurological Surgery: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

American Board of Obstetrics and Gynecology: *Part I. Written.* Various Centers, Feb. 6. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

American Board of Ophthalmology: Chicago, Oct. 6-12. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

American Board of Orthopaedic Surgery: Part II. Chicago, Jan. 22-23. Final date for filing applications is Sept. 15. Sec., Dr. F. M. McKeever, 1136 W. Sixth St., Los Angeles 14.

American Board of Otolaryngology: Chicago, Oct. 7-11. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 24-25. Final date for filing application is Sept. 15. Sec., Dr. Robert A. Moore, Euclid Ave. and Kingshighway, St. Louis 10.

American Board of Pediatrics: Dallas, Dec. 5-7. Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

American Board of Plastic Surgery: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Louis T. Byars, 508 N. Grand Blvd., St. Louis.

American Board of Psychiatry and Neurology: *Oral.* New York, December. Final date for filing application is Sept. 15. Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S. W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, March. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia 2.

American Board of Urology: Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Harry Culver, 1409 Willow St., Minneapolis 4.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: What Constitutes Disapproval of Medical School.—Aarons, Burroughs and Mann filed separate mandamus proceedings against the Board of Medical Examiners of the State of California. Aarons sought to compel the board to admit him to the written examination; Burroughs and Mann sought to compel the issuance to them of reciprocity certificates without examinations. All three cases were tried together on the same record and all three resulted in judgments for the petitioners. The Board of Medical Examiners accordingly appealed to the district court of appeals, first district, division 2, California.

Section 2310 of the Medical Practice Act of California provides: "The Board shall issue a reciprocity certificate to an *applicant to practice a system or mode of treating the sick* or afflicted in this state that he is authorized to practice in any other state if it is a system or mode that is recognized by this chapter or by any preceding practice act. Subject to the provisions of sections 2320 and 2321, no examination for any reciprocity certificate shall be required." The qualification found in the last sentence naturally directs the inquiry to section 2320, which reads as follows: "The board may make an independent investigation of the educational qualifications and the character, ability and standing of the applicant. If, after this investigation and any other or further examination or investigation which the board may see fit to make on its own part, it is found that the requirements of the medical licensing authority issuing his certificate were in any degree or particular less than the requirements provided by the law of this state at the date of the issuance of his certificate . . . he will not be entitled to practice in this state without an examination." Section 2321 provides that if the out of state license is more than 10 years old the candidate must take an oral examination. When sections 2310 and 2320 are read together they must necessarily mean that if the candidate measured up, in his own state, to California's requirements—one of which is graduation from a school approved by the California board—then he should be admitted without examination, but if he did not, he must submit to an examination. The fact that an examination is called for must necessarily mean that the requirements of the other state have been found to be below those of California. Certification after an examination so required cannot possibly amount to approval of the applicant's school.

The three petitioners were graduates of the Chicago Medical College, which was disapproved by the defendant board by a resolution dated Feb. 18, 1924 and such action has never been rescinded. To surmount this barrier, counsel for the petitioners drew the board's attention to the fact—disclosed, of course, by its own records—that (despite such formal disapproval) at least nine graduates of the same school had been granted certificates by the board. The theory on which the mandate proceedings in the trial court were commenced, and the theory of the petitioners on appeal, is that what the board did in admitting nine graduates of the same school outweighed and nullified what it said in the resolutions of disapproval and amounted to de facto approval of the school.

Of the nine instances referred to by the petitioners wherein graduates of the Chicago Medical College had been admitted to practice in California, only two were admitted without examination. One of these was admitted under compulsion of a court mandate, said the District Court, and such action under such circumstances cannot be characterized as an approval of the school. The other was admitted without examination on resolution of the board. He had graduated from the Chicago Medical College in 1923 and, as noted, the board's resolution of disapproval of the college was dated 1924.

The petitioners also contend that an approval of the school may be implied from the wording of the board's directories. Instead of approval, the directories, in our opinion, said the court, definitely show disapproval. The 1945 directory contains a list of medical schools both existing and extinct. It announces that existing recognized schools are in black faced type. Schools in light face type are extinct, have merged with other schools or are not recognized." Under Illinois, forty-five schools are listed. Five of these are shown in black faced type, meaning approved. Of the remaining forty, sixteen—including the school in question—are listed not only in light faced type but with the designation "reported not acceptable for licensure by many of the state licensing boards, or not approved as a medical school by the Council on Medical Education of the American Medical Association." This, concluded the District Court of Appeals, certainly does not indicate approval.

At the trial the board offered in evidence its minutes of June 30, 1927, wherein by resolution the board disapproved the school for the second time. The petitioners objected that the resolution had not been called to the board's attention or introduced in evidence, so to speak, at the informal hearing which the board accorded to petitioners, and the objection was sustained. We have no doubt that the ruling was erroneous, said the District Court of Appeals. The resolution was contained in the board's minutes and was certainly within its own knowledge. The principal, if not the only, question in the case is whether there had been approval or disapproval of the school. The resolution tended to disprove petitioner's allegations and to prove those of the board on that issue. The first resolution, of Feb. 18, 1924, had been admitted and the second resolution was just as admissible as the first. These resolutions showed two formal actions by the board disapproving the school. Manifestly such formal and deliberate actions of the board, to whom the legislature had committed the important duty and function of approving or disapproving medical schools, should not be subject to nullification by less formal or deliberate action except by the strongest kind of showing. The evidence relied on to establish such nullifications should be clear, convincing and unequivocal. Such proof was not forthcoming in this case, and we are constrained to hold that there is no substantial evidence in this record to sustain the findings that the school had been approved.

Another contention of the petitioners was that the board's action was arbitrary, capricious, discriminatory and violated his constitutional rights. To support this contention petitioners quoted from *Hewitt* v. *State Board of Medical Examiners*, 148 California 590, 84 P. 39, the familiar statement that "the right to practice medicine is, like the right to practice any other profession, a valuable property right, in which, under the Constitution and laws of the state, one is entitled to be protected and secured." However true that is, said the district court of appeals, it must be borne in mind that that language was used in respect to a license which had been already issued and was outstanding, not one which was then only applied for. In Re Investigation of Conduct of Examination for Admission to Practice Law, 1 Cal. (2d) 61, 33 P. (2d) 829, the court, after commenting on the "mistaken conception" that there exists "a 'vested right' to practice law," says "It has been the rule in this state . . . that 'the right to practice law is not an absolute right derived from the law of nature. It is the mere creature of the statute, and when the license is issued and the official oath taken, which authorizes the attorney to exercise the right, it confers but a statutory privilege, subject to the control of the legislature.' . . ." That declaration, said the court of appeals, of course applies with equal right to the practice of medicine.

Other points raised by the petitioners were also overruled and the judgments of the trial court were reversed with directions to dismiss the mandate proceedings.—*Aarons v. Board of Medical Examiners, 176 P. (2d) 706 (Calif., 1947); Mann v. Board of Medical Examiners, 176 P. (2d) 708 (Calif., 1947); Burroughs v. Board of Medical Examiners, 176 P. (2d) 715 (Calif., 1947).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

73:531-650 (May) 1947

*Cutaneous Tests and Immunization in Diphtheria and Scarlet Fever. J. A. Toomey and R. A. Keller.—p. 531.
Serum Levels of Vitamin A in Children: Comparison Following the Oral and Intramuscular Administration of Vitamin A in Oily and in Aqueous Mediums. B. Kramer, A. E. Sobel and S. P. Gottfried. —p. 543.
*Frequency of Encephalitis as Complication of Measles: Report of 20 Cases. A. L. Hoyne and E. L. Slotkowski.—p. 554.
Glycogen Content of Isolated White Blood Cells in Glycogen Storage Disease. R. Wagner.—p. 559.
Sulfonamide Drugs: Comparison of Blood Levels Obtained with Their Administration by Different Routes in Children. G. H. Clarke.—p. 565.
Hypertension in Children Caused by Pheochromocytoma: Report of 3 Cases and Review of the Literature. C. H. Snyder and E. H. Vick. —p. 581.

Cutaneous Tests and Immunization in Diphtheria and Scarlet Fever.—All student nurses who enter contagious service at Cleveland City Hospital are given Schick and Dick tests routinely. Those who have positive reactions are immunized against the antigen to which they are susceptible. In a twenty year period nearly 50 per cent of a group of student nurses were found to give positive reactions to the Schick test. Neither the density of population of the area they came from nor the fact that some had had diphtheria significantly altered the rate of positivity. Alum precipitated toxoid was found to be the best immunizing agent against diphtheria in these young adults. In over 6,500 Dick tests on student nurses, 38.9 per cent of the reactions were positive. Persons from smaller towns had a higher percentage of negative reactions than did persons from Cleveland hospitals. Persons who had had scarlet fever had a higher rate of negative reactions than those who had not had scarlet fever. The Dick test is a good but not perfect indicator of immunity to scarlet fever. Immunization with Dick toxin was 89.1 per cent effective in that the cutaneous test was reversed. Reactions were observed in 28.7 per cent of those immunized. Some reactions were serious, but most were local.

Frequency of Encephalitis as Complication of Measles.—According to Hoyne and Slotkowski it is difficult to determine the exact incidence of measles encephalitis because not all cases of measles are reported and many cases of mild encephalitis may be missed. The series of 20 cases reviewed makes a ratio of 1 to 642 on the basis of cases of measles reported in Chicago. If 10 additional cases are included, 3 of which were fatal and were observed by one of the authors at Municipal Contagious Hospital, the ratio for 30 cases of encephalitis becomes 1 in 428 reported cases of measles. This seems to be the highest incidence for measles encephalitis that has been reported. A table which lists the incidence arrived at by other investigators indicates that this complication develops in less than 1 per thousand cases. One author arrived at an incidence of only 1 in 15,000 cases. Of the 20 cases of measles encephalitis analyzed by the authors, 2 ended fatally soon after admission and another after transfer to a private hospital. The mortality rate in these 20 cases amounted to 15 per cent. Complete recovery occurred in 16 of the remaining 17 cases, whereas some muscular spasticity and incoordination remained in 1 case on dismissal from the hospital. Encephalitis is an early complication and rarely occurs after the rash of measles has disappeared. It is much commoner after 5 years than before. Negroes are likely to escape this complication entirely. Even in extremely severe attacks complete mental as well as physical recovery is possible.

American Journal of Pathology, Ann Arbor, Mich.

23:327-506 (May) 1947

*Aleukemic Myelosis: Chronic Nonleukemic Myelosis, Agnogenic Myeloid Metaplasia, Osteosclerosis, Leukoerythroblastic Anemia and Synonymous Designations. E. L. Heller, Marjorie G. Lewisohn and W. E. Palin. —p. 327.
*Lesions Following Use of Ertron in Rheumatoid Arthritis. Margaret Bevans and H. K. Taylor.—p. 367.
Radioautographic Studies of Distribution of Lewisite and Mustard Gas in Skin and Eye Tissues. Dorothy J. Axelrod and J. G. Hamilton. —p. 389.
So Called Pulmonary Adenomatosis and "Alveolar Cell Tumors": Report of Case. M. A. Simon.—p. 413.
Distinctive Characteristics of Sympathicoblastoma Cultivated in Vitro: Method for Prompt Diagnosis. Margaret R. Murray and A. P. Stout. —p. 429.
Intestinal Lipodystrophy of Whipple: Report of Case and Analysis of the Literature. May S. Rosen and S. H. Rosen.—p. 443.
Infectious Mononucleosis: Autopsy Report. F. H. Allen Jr. and A. Kellner.—p. 463.
Cysts of Adrenal Gland, with Case Report. D. L. Reimann and W. L. Guyton.—p. 479.
Pathogenesis of Polycystic Pancreas: Reconstruction of Cystic Elements in 1 Case. R. F. Norris and R. M. Tyson.—p. 485.
Ectopic Smooth Muscle in Human Gastric Mucosa. R. Lattes.—p. 501.

Aleukemic Myelosis.—According to Heller and his associates the existence of a disease closely related to, or a variant of, myelogenous leukemia has been known for many years. It presents features sufficiently distinct to have resulted in its separation from leukemia. The authors report 3 cases which, together with a review of the literature, led them to identify a syndrome characterized by splenomegaly and nonspecific alterations in the blood as a form of myelogenous leukemia. Many cases of this type are genuinely aleukemic. Although this disorder is not particularly rare, its leukemic nature has not been generally recognized because of atypical clinical, hematologic and pathologic features. Its identity has been obscured by a diversified terminology. Aleukemic myelosis is an appropriate designation. Osteosclerosis may occur in the course of myelogenous leukemia. Its occurrence favors the development of an aleukemic state of the blood. The criteria alleged to differentiate the disorder from leukemia do not withstand critical analysis. Cases of the type reported present strong evidence to support the belief that much of the myeloid reaction of the spleen, liver and lymph nodes in myelogenous leukemia is not an expression of colonization (metastasis) but of myeloid transmutation of the local reticuloendothelial system of these organs.

Lesions Following the Use of Ertron in Rheumatoid Arthritis.—A woman aged 63 with rheumatoid arthritis took daily for about a year, without medical supervision, three or four capsules of ertron, that is, from 150,000 to 200,000 international units of vitamin D. Numerous abscesses developed. The woman died one month after admission to the hospital. On the basis of clinical and postmortem observations Bevans and Taylor conclude that the use of ertron led to hypercalcemia and calcium deposition in the periarticular and subcutaneous tissues, lungs, heart and kidneys. There were chronic and acute granulomatous lesions in the lungs, the pancreas, the kidneys and the lymph nodes the nature of which was obscure. It is suggested that these lesions are related to the use of ertron. Extensive damage to the renal tubules formed an anatomic basis for clinical renal insufficiency.

American Practitioner, Philadelphia

1:459-516 (May) 1947

*Essential Hypertension: Prognosis and Comparison of Medical and Surgical Treatments. W. F. Rogers and R. S. Palmer.—p. 459.
Sinusitus and Allergic Diseases. R. C. Grove.—p. 468.
Earlier Recognition of Minimal Aortic Insufficiency. N. E. Reich. —p. 475.
Operations to Produce Sterility: Medicolegal Implications—Medical Aspects. F. H. Falls.—p. 479.
Id.: Legal Implications. B. Shartel.—p. 484.
Maintaining Nitrogen Balance with Partially Hydrolyzed Protein: Three Adults Maintained by the Oral Administration of Partially Hydrolyzed Lactalbumin. M. L. Soenke, M. G. Horning and E. H. Watson. —p. 489.

Medical and Surgical Treatments in Essential Hypertension.—A review of 1,072 records of patients seen personally by Rogers and Palmer is the basis of the comparison of the effects of medical and surgical treatments of hypertension.

They found that, when therapeutic effectiveness is judged by a persistent lowering of the blood pressure to normal or near normal, dorsolumbar sympathectomy is twice as effective as a general medical regimen plus the use of thiocyanate, but after three years this is maintained in only 25 per cent of the patients, though at least 60 per cent show some lowering of the blood pressure. Relief of headache and throbbing of the head by dorsolumbar sympathectomy is nearly 100 per cent, while general symptomatic relief by medical means varies from 90 per cent in grade 1 to 46 per cent in grade 3 and is as a rule only temporary and in a smaller proportion with malignant grade 4 hypertension. Sympathectomy is regarded as the treatment of choice in malignant hypertension if renal impairment is not severe and there is no frank congestive heart failure. Operation may be offered to patients with benign hypertension whose blood pressures by interval observations appear to be growing worse. In many cases essential hypertension is compatible with a long and active life; often it is not accompanied by symptoms for many years.

Annals of Internal Medicine, Lancaster, Pa.

26:643-812 (May) 1947

*Use of Folic Acid in Sprue. R. M. Suárez, T. D. Spies and R. M. Suárez Jr.—p. 643.
Diagnosis of Occupational Disease. I. Gray.—p. 678.
*Immobilization of Both Lungs Produced by Equalizing Pressure Chamber, with Results of Treatment in Pulmonary Tuberculosis. A. L. Barach.—p. 687.
Healed Subacute Bacterial Endocarditis: Report of 2 Cases with Death Due to Congestive Heart Failure. A. H. Honigman and J. R. Karns. —p. 704.
Vectors of Rickettsial Diseases. G. M. Kohls.—p. 713.
Kala-Azar in United States: Review of Literature and Report of 2 Cases: Stilbamidine Treatment. H. D. Ecker and J. M. Lubitz.—p. 720.
*Aspirin Allergy: Its Relationship to Chronic Intractable Asthma. S. Friedlaender and S. M. Feinberg.—p. 734.
*Anoxemia Test for Coronary Insufficiency. H. J. Weintraub and L. F. Bishop Jr.—p. 741.

Folic Acid in Sprue.—Suárez and his co-workers administered folic acid to 22 white patients, 17 men and 5 women between the ages of 18 and 67, with full blown sprue. An additional 28 patients with sprue had been maintained in relatively good health for a number of months or years under adequate parenteral liver therapy; they were transferred from that to the oral administration of folic acid. The efficacy of folic acid in the treatment of tropical sprue has been confirmed and extended in these 50 patients. The daily oral administration of 10 mg. proved adequate. The administration of small daily doses is more effective than fifty times as much given in a single dose. Observations made on 5 patients suggest that a daily dose of 20 mg. of folic acid together with an adequate sprue diet rich in animal proteins and vitamins but poor in fats and carbohydrates produces better results than the administration of larger doses accompanied by an inadequate diet low in animal proteins and high in carbohydrates and fats. The maintenance dose of folic acid has not been established definitely, but 2.5 to 5 mg. daily seems to be an adequate maintenance dose for the majority of the patients.

Immobilization of Both Lungs in Pulmonary Tuberculosis.—Barach obtained immobilization of both lungs by immobilization of the chest wall and diaphragm in 12 patients with advanced bilateral and moderately advanced pulmonary tuberculosis who were treated in the equalizing pressure chamber. A normal exchange of oxygen and carbon dioxide is maintained without the movements or the effort of breathing. The mechanism is dependent on the equalization of pressures on the two sides of the chest wall. This is achieved by delaying a wave of alternating pressure to the degree required to compensate for the resistance of the nasopharyngeal tracheobronchial passage way. Six patients recovered clinically, 1 patient showed definite improvement, 3 obtained slight to moderate temporary benefit and 2 showed no change. Five of the 6 patients who recovered were observed for variable follow-up periods of one to seven years. Of the 12 patients, 8 were given a single course of three to four months for eight to eleven hours daily, 3 had two courses and 1 had three courses. That closure of tuberculous cavities is a specific result of immobilization of both lungs has been demonstrated in cases unsuitable for or unresponsive to other methods of treatment by x-ray evidence of cavity disappearance during treatment, its reappearance on bed rest following termination of chamber therapy and a repetition of closure of the same cavity by a subsequent course.

Aspirin Allergy.—Friedlaender and Feinberg observed 45 persons (17 men and 28 women) with severe chronic asthma and a history of hypersensitivity to aspirin. The drug allergy in almost every instance was discovered by the patient some time after the appearance of chronic asthma. Familial allergy of some type was ascertained in 33 patients. A high incidence of emphysema, nasal allergy with polyposis, eosinophilia and frequent absence of positive skin reactions to specific agents were observed. Of 16 patients who gave positive skin reactions, attention to these factors resulted in moderate to considerable improvement in 12, while 4 patients showed no appreciable benefit. In the majority in whom etiologic factors could not be determined, management based on the control of associated infectious elements proved disappointing. Nonspecific methods of treatment were of limited value. Since aspirin in these patients produces acute episodes of asthma yet fails to give positive skin reactions, it is suggested that repeated exposure to other substances of a chemical nature in the diet or environment also incapable of giving positive skin tests may be responsible for the chronic asthma encountered in these patients. Allergy to aspirin may be an indicator that the person has acquired the mechanism to react to simple chemical compounds. Such a mechanism could explain the many cases of allergic disease in which a specific protein allergen cannot be identified.

Anoxemia Test for Coronary Insufficiency.—Weintraub and Bishop did the anoxemia test for coronary insufficiency as standardized by Levy and his co-workers on 20 men between the ages of 35 and 66 with angina of effort and on 200 control persons without angina of effort. Eleven (55 per cent) of the 20 patients with coronary insufficiency gave positive objective, electrocardiographic tests. In addition 7 more (35 per cent) gave positive presumptive tests, giving a total of 18 (90 per cent) positive tests, objective and/or presumptive. Nine (4.5 per cent) of the 200 controls gave positive objective tests. There were no positive presumptive tests in the control group. Of these 9 cases there were only 2 (1.0 per cent of the control group of 200) which had no abnormal cardiovascular, hemic or emotional factors present which might account for a positive test. This 1.0 per cent may be considered either as false positives or as examples of coronary insufficiency of obscure etiology. Within the strict limits as defined by Levy and his co-workers and with the added caution that the test shall be terminated immediately after a four lead electrocardiogram taken directly at the onset of pain, this test may be considered safe and an office procedure requiring the attendance of the physician and one technician. Reactions are readily relieved by the administration of 100 per cent oxygen. This test is a valuable aid in the diagnosis of coronary insufficiency.

Archives of Pathology, Chicago

53:335-438 (April) 1947

*Visceral Kaposi's Disease. C. G. Tedeschi, H. F. Folsom and T. J. Carnicelli.—p. 335.
Fibrosarcoma of the Epididymis. Bela Halpert and W. V. Thompson. —p. 358.
Some Manifestations of Vitamin E Deficiency in the Monkey. K. E. Mason and I. R. Telford.—p. 363.
Effects of Podophyllin and Colchicine on Normal Skin, on Condyloma Acuminatum and Verruca Vulgaris: Pathologic Observations. L. S. King and M. Sullivan.—p. 374.
Age and Weight as Factors in Development of Experimental Cholesterol Atherosclerosis in Rabbits. O. J. Pollak.—p. 387.
Lymphosarcoma of the Larynx: Report of Case. M. Schlemenson and E. Caceres.—p. 393.
Primary Pulmonary Anthrax with Septicemia. J. S. Cowdery.—p. 396.
Acinous Cell Carcinoma of the Pancreas with Extensive Fat Necrosis. C. Auger.—p. 400.
*Rupture of the Heart from Blast Injury. J. M. Miller.—p. 406.
Helminthic Infection of the Wall of the Gallbladder. P. H. Hartz, M. J. Hugen-Holtz and A. Van der Sar.—p. 408.

Visceral Kaposi's Disease.—Tedeschi and his associates direct attention to the uncommon condition first described by Kaposi and designated first as "idiopathic multiple pigmented sarcoma," then as "sarcoma idiopathicum multiplex hemorrhagicum" and currently as Kaposi's sarcoma or multiple idiopathic hemorrhagic sarcoma. Tedeschi reviews the literature on Kaposi's disease with particular attention to the visceral manifestations. From the study of 2 cases in which the liver, kidney and small bowel showed multiple independent growths and of a third case with mediastinal localization, all the growths consisting of newly formed blood channels and including proliferations of endothelial and adventitial connective tissue cells, of phagocytic histiocytes, of fibroblasts, of lymphoid elements, of a well organized reticulum and, in 1 case, of immature hematic cells, he concludes that the patterns of the visceral lesions were identical with those of the cutaneous lesions of Kaposi's disease. It is suggested that Kaposi's disease is systemic in nature and likely to involve simultaneously or successively the skin and the internal organs and that it is characterized by a great variety of patterns inherent in the multiple developmental potentialities of the basic unit of growth, the reticulum cell.

Rupture of Heart from Blast Injury.—A 19 year old soldier, member of a blasting and drilling crew, was killed by a premature explosion while working directly over a drill hole in which dynamite had been placed. Death occurred almost instantly. Necropsy revealed a pericardial sac tense and blue-black, with the color of the enclosed blood showing through it. About 700 cc. of liquid and coagulated blood was found within the sac. Three rents were found in the left ventricle. Death was obviously caused by rupture of the left ventricle with the resultant hemopericardium and acute cardiac tamponade. This injury was the direct result of the blast, as proved by the facts that there was no penetrating wound of the chest and that the pericardial sac was intact.

California Medicine, San Francisco

66:277-330 (May) 1947

Medicine's Challenge. S. J. McClendon.—p. 277.
*Increasing Importance of Q Fever Infection. G. Cheney.—p. 280.
*Treatment of Malignant Melanoma: Report of 862 Cases. G. T. Pack, S. L. Perzik and Isabel M. Scharnagel.—p. 283.
*Rupture of the Heart. W. W. Ellwood.—p. 287.
Respiratory Mold Allergy: A Twelve Months Atmospheric Survey in San Francisco. W. C. Deamer and H. W. Graham.—p. 289.
Use of Sulfasuxidine in Resection of Carcinoma of the Colon: Effect on Infection and Mortality. H. G. Bell.—p. 292.
Controlled Evaluation of Gold Therapy in Rheumatoid Arthritis. H. Waine, F. Baker and S. R. Mettier.—p. 295.
Cancer Mortality in San Francisco. J. C. Geiger.—p. 297.
Acute Hematogenous Osteomyelitis Treated with Penicillin: Case Report. C. C. Purviance and J. F. Lovejoy.—p. 302.
The Pulse in Ancient Chinese Medicine. A. Fields.—p. 304.
Progress in Management of Syphilis. J. F. Flynn and O. M. Stout.—p. 306.

Increasing Importance of Q Fever.—Cheney points out that since 1945 Queensland fever, or Q fever, has passed from a limited orbit of concern to worldwide interest, because it has been identified in three new localities. In each instance the presence of Q fever infection was not believed to be due to a chance importation. Rather it was considered as due to an endemic focus, long present but only just brought to light by the increase in diagnostic facilities. The presence of Rickettsia burneti, which causes Q fever, has been reported from Panama, Italy, the Balkans and Texas, where it has caused "virus pneumonitis" infections. As Q fever is now known to be widely spread throughout the world, and as serologic tests satisfactory for diagnosis have been developed, this infection assumes an increase in clinical and public health importance.

Treatment of Malignant Melanoma.—Pack and his associates present an analysis of 862 cases of malignant melanoma, of which 595 were available for five year end result study, with an overall salvage of 9.7 per cent. Radiation therapy alone has yielded no five year survivals. Surgical attack has resulted in 38.4 per cent three year and 17.7 per cent five year salvage for localized melanomas, and 18.7 per cent three year and 15.6 per cent five year salvage of patients with melanoma metastatic to regional lymph nodes. There is presumptive evidence of a trend toward greater saving of life by widening the scope of the radical surgical attack through the institution of one fundamental principle of cancer surgery, namely the *en masse* excision of the primary lesion with its entire lymphatic drainage basin and the dissection of the regional nodes "in continuity."

Rupture of Heart.—Ellwood shows that, in cases of sudden death, postmortem examination will sometimes disclose a rupture of one of the ventricles through the area of a recent infarction. He reports histories of 4 patients who died suddenly, with necropsy revealing rupture of the anterior surface of the left ventricle. In the first 2 cases there was rupture of the left ventricle due to a recent infarction, yet clinically no symptoms presented themselves. The true diagnosis was established only by necropsy. The third case was interesting in that a diagnosis of coronary insufficiency was made ante mortem, yet the patient was asymptomatic and refused to stay in bed. The myocardium ruptured fifteen days later through an area of a second infarct below an already weakened part of the ventricle. In case 4 also there had been ante mortem coronary insufficiency, and a rupture developed through the site of a new infarction. Examination revealed the scarred muscle of an old infarct. These 4 deaths occurred within a short period. The author concludes that rupture of the heart following a recent myocardial infarction is a far from rare cause of acute cardiac failure. All cases of sudden death should have a postmortem.

Gastroenterology, Baltimore

8:565-694 (May) 1947

*Effect of Radiation Therapy on Nocturnal Gastric Secretion in Patients with Duodenal Ulcers. E. Levin, Anna Hamann and W. L. Palmer.—p. 565.
Newer Phases of Gastroduodenal Ulcer. G. B. Eusterman.—p. 575.
Cholangiography Performed with the Help of Peritoneoscopy. H. Royer and A. V. Solari.—p. 586.
*Polyps of Stomach with Reference to Gastroscopic Findings. W. D. Paul and W. P. Logan.—p. 592.
*Symptomatology of Chronic Gastritis. J. L. Horner.—p. 607.
Study of Carotene and Vitamin A Levels in the Aged. H. A. Rafsky, B. Newman and N. Jolliffe.—p. 612.
Alterations in Colonic Function in Man Under Stress: Experimental Production of Changes Simulating the "Irritable Colon." T. P. Almy and M. Tulin.—p. 616.
Uropepsin: Review of Literature and Report of Some Experimental Findings. Gladys R. Bucher.—p. 627.
Chemical, Physiologic and Pathologic Observations on Role of Pepsin and Hydrochloric Acid in the Production of Experimental Ulcers. H. H. LeVeen.—p. 648.
The Sippy Regimen Protects Against the Histamine-Provoked Ulcer. J. Fast, S. Friesen and O. H. Wangensteen.—p. 662.

Effect of Radiation Therapy on Nocturnal Gastric Secretion in Patients with Duodenal Ulcer.—Levin and his co-workers report studies which demonstrate that the fasting nocturnal gastric secretion in 28 patients with uncomplicated duodenal ulcer varied from 550 cc. to 1,750 cc., the average value being 1,110 cc., with a free acidity ranging from 18 to 122 clinical units, with an average of 62. In 9 patients studied during the period of x-ray therapy directed at the fundus and body of the stomach, a reduction in the volume secreted and the free acidity of the night secretion was noted during the first week of therapy in 7; an increase occurred in 2. In 14 of 15 patients studied at varying intervals after therapy a decrease in volume occurred, the average reduction being 47.4 per cent. In 1 patient the volume was increased but the free acidity disappeared. In all patients there was a noticeable reduction in the free acidity of the nocturnal secretion, the reduction amounting in 13 of the 15 to complete anacidity. Comparable reduction was observed in the gastric secretory response to histamine.

Polyps of Stomach.—Paul and Logan say that in the course of 1,725 gastroscopies 10 cases of gastric polyps and 3 questionable cases were found. Although the histologic structure of gastric polyps is variable, the majority are adenomas, with leiomyomas forming the second largest group. Certain polyp-like lesions are found on microscopic examination not to be tumors and are referred to as pseudopolyps. The most important aspect of gastric polyps is their tendency to become malignant, although the exact incidence of this degeneration is not known. Reports in the literature indicate a higher incidence of gastric polyps than was found in the series of gastroscopies under consideration. The authors cite factors that may account for this discrepancy. The clinical picture is in no way diagnostic, and frequently the condition is asymptomatic. However, any patient with gastrointestinal bleeding, obstructive signs (especially if intermittent), and, in fact, any gastrointestinal complaints which are unexplained should be thoroughly examined for the possibility of gastric polyps. The only means of establishing a diagnosis is by x-ray and gastroscopic examination. Their combined use should give a high percentage of accurate diagnoses. The statement that all gastric polyps require surgical removal should be modified. Although it is true that all large polyps or those which suggest malignant changes should be removed, the usual small benign polyp does not require such a radical procedure. These are probably just as well left alone, although gastroscopy at frequent intervals is necessary to catch signs of malignant degeneration.

Symptomatology of Chronic Gastritis.—Horner points out that there is no agreement among gastroenterologists as to the role of chronic gastritis in the production of symptoms. Many patients showing mucosal changes which we have come to call chronic gastritis do not have symptoms. The records of 50 patients with each type of gastritis were studied. The study demonstrated that the quality of distress in patients with atrophic gastritis is quite different from that found in those having a hypertrophic form of mucosal change. Those with atrophy have an epigastric fulness or sense of pressure which is not related to meals and is not relieved by food or alkali. The patients who were found to have hypertrophic gastritis complained of definite "pain," which was frequently relieved by food and alkali. This qualitative difference suggests that the gastritis itself is concerned in the production of epigastric distress.

Journal of International College of Surgeons, Chicago

10:135-262 (March-April) 1947

*Prolapsing Gastric Mucosa. L. H. Appleby.—p. 135.
Colocolic Intussusception. R. G. Majer.—p. 142.
Urinary Extravasation. L. E. McCrea.—p. 149.
Technic of Thyroidectomy: Simple Method of Grasping Toxic Thyroid. E. A. Balcer.—p. 154.
Variational Anatomy of Middle Colic Artery: Its Significance in Gastric and Colonic Surgery. G. L. Robillard and A. L. Shapiro.—p. 157.
*Chondromalacia of Patella as Disease of the Amputated. E. E. Kallio.—p. 170.
Study of Modern Methods of Treatment of Intestinal Obstruction. M. Bodenheimer, D. Casten and J. J. Fried.—p. 174.
Recent Advances in Treatment of Thyrotoxicosis, with Special Reference to Thiouracil. U. G. Dailey.—p. 185.
Kidney and Ureter in Gynecology. D. Lazarus and E. E. Lazarus.—p. 192.
Operative Treatment of Chronic Otitis Media. W. O. Lodge.—p. 197.
Lung Resection in Bronchiectasis: Preoperative Considerations. L. A. Akopiantz.—p. 208.
Prone Position in Thoracic Surgery. R. H. Overholt and F. M. Woods.—p. 216.
Relief of Pelvic Pain by Sympathectomy and Intraspinal Alcohol Injections. J. P. Greenhill.—p. 218.
Total Extirpation of Lateral Lymph Nodes of the Neck. C. A. Pantoja.—p. 245.
Surgery of Gastroduodenal Ulcers. A. Sabogal.—p. 251.
Cutting of Adhesions. M. Espinoza Galarza.—p. 254.
Cancer of Larynx: Radiotherapy and Surgical Considerations. E. Caceres Graziani.—p. 257.
Surgical Indications to Treatment of Peptic Ulcer. C. A. Protzel and G. Barrantes.—p. 260.

Prolapsing Gastric Mucosa.—Appleby employed partial gastric resection in the treatment of 7 patients, 5 women and 2 men between the ages of 40 and 65, with prolapsing gastric mucosa. Of 594 gastric resections only these 7, i. e. 1.1 per cent, have been performed for this condition. The chief complaint was intermittent cramping pain aggravated by food and relieved by emesis. The average weight loss was 26 pounds (11.8 Kg.) over the average duration of seven years preceding recognition and operation. A jockey-cap type of filling defect supervening on traceable mucosal patterns without other gross pathologic change is considered to be roentgenologically pathognomonic of prolapsing gastric mucosa. Gastric analysis revealed a high retention total acidity, with subsequent readings recording a subnormal curve. In 4 cases occult blood was present in the stool from small cracks or ulcers on the surface of the prolapsed turgid mucosa. Postoperatively all patients are alive and well; there has been no recurrence of symptoms. Prolapsing gastric mucosa is a clinical entity and as such should be recognized and correctly diagnosed more frequently. Diagnosis depends on x-ray examination or visual inspection of the opened abdomen. Best therapeutic results are obtained by partial gastric resection rather than by less radical procedures.

Chondromalacia of Patella.—Kallio examined the knee joints of 450 disabled soldiers and surveyed by questionnaire an additional 1,050 disabled soldiers who had amputations during 1939 and 1940 without known history of trauma of the knee. Of the 1,500 disabled soldiers 1,308 (87 per cent) belonged to the age groups between 21 and 40, which is of interest as chondromalacia of the patella in persons younger than 20 is of little importance and in persons older than 40 has also been established in 65 to 100 per cent of nonamputated persons. In the age groups between 21 and 40 years manifest chondromalacia of the patella was observed to be causing knee pain in 23 per cent of the examined men and in 27 per cent of the questionnaire men with femur amputations. The troubles set in either during the amputation year or in the following year. In both groups incidence of chondromalacia was lower among the men with crus amputations than in those with femur amputations. It is suggested that walking with a prosthesis is apt to cause manifest chondromalacia of the patella. In femur amputations the condition is probably caused by overexertion of the one knee. The apparent lower incidence in crus amputations is probably due to the fact that in these cases the prosthesis is more apt to restore the weight conditions prevailing before amputation. When after using a prosthesis a previously healthy person is affected with chondromalacia of the patella, increasing his invalidity, the disorder should be considered a sequela to the original trauma from the point of view of insurance medicine.

Journal of Neurosurgery, Springfield, Ill.

4:191-298 (May) 1947

Role of the Dentate Ligaments in Spinal Cord Compression and Syndrome of Lateral Sclerosis. E. A. Kahn.—p. 191.
The Three Types of Glioblastoma. E. Busch and Erna Christensen.—p. 200.
Cutaneous Areas Denervated by Upper Thoracic and Stellate Ganglionectomies Determined by Electrical Skin Resistance Method. C. P. Richter.—p. 221.
Tic Douloureux and Its Relationship to Tumors of Posterior Fossa: Analysis of 24 Cases. A. G. Revilla.—p. 233.
Modern Considerations of the Man with Brain Injury. J. A. Aita.—p. 240.
Cerebral Swelling: Histopathology, Classification and Clinical Significance of Brain Edema. I. M. Scheinker.—p. 255.

Kentucky Medical Journal, Bowling Green

45:129-182 (May) 1947

Management of Acute Head Injuries. H. E. Houston.—p. 137.
Surgery of Infancy and Childhood. C. M. Edelen.—p. 146.
Treatment of Goiter. M. Thompson.—p. 150.
Trends of Irradiation Therapy in Ophthalmology, Laryngology, with Radioactive Isotopes, with a Review of Literature. E. L. Shiflett.—p. 154.
Recent Trends in X-Ray Therapy: Particular Reference to Supervoltage X-Rays. H. L. Townsend.—p. 160.
Clinical Indications for X-Ray and Radium Therapy. J. Love.—p. 163.
Diphtheria in Kentucky. F. W. Caudill.—p. 168.

45:183-216 (June) 1947

Psychiatry for the General Practitioner. W. K. Keller.—p. 187.
Practical Hormone Therapy. L. A. Gray.—p. 192.
Blood Dyscrasias in Children. H. S. Andrews.—p. 197.
Rupture of Esophageal Ulcer: Case Report. N. Casper.—p. 201.
Small Community Hospital. G. L. Simpson.—p. 202.
Menopause. F. D. Coleman.—p. 207.
Id.: From Viewpoint of the Gynecologist. W. O. Johnson.—p. 209.
Id.: Psychiatric Aspects. L. M. Foltz.—p. 212.

New England Journal of Medicine, Boston

236:773-816 (May 22) 1947

Shattuck Lecture: Clinical Significance of Some Peculiarities of the Circulation in the Kidneys, Liver, Lungs and Heart. W. Dock.—p. 773.
Dwarfism in Healthy Children: Possible Relation to Emotional Nutritional and Endocrine Disturbances. N. B. Talbot, Edna H. Sobel, Bertha S. Burke, E. Lindemann and Shirley B. Kaufman.—p. 783.
*Clinical Syndrome Simulating Poliomyelitis. R. H. Young.—p. 794.
Allergic Reaction to Penicillin: Report of a Case. E. M. Holden.—p. 796.
Physical Medicine. A. L. Watkins.—p. 799.
Calcareous Aortic Stenosis, Congenital Bicuspid Aortic Valve, Hypertrophy of Left Ventricle, Deviation of Interventricular Septum: ? Bernheim Syndrome.—p. 806.
Papillary Carcinoma of Left Renal Pelvis.—p. 809.

Syndrome Simulating Poliomyelitis.—Young says that during the week of August 11 to 18, 1946, when a total of 34 new cases of poliomyelitis were reported in Nebraska, there was considerable apprehension on the part of the people of that area. Each day the press reported new cases and the precautions to be taken. In letters to editors, readers asked for spraying of the city with DDT and offered new epidemiologic theories. Precautions dictated by fears were at times extreme. During the week when 34 new cases of poliomyelitis appeared in the state, 5 cases closely simulating poliomyelitis were observed in private practice, in 4 of which there was hysterical paralysis of one or more extremities. The author reconstructs the following composite picture: an attitude of great anxiety precipitated by the development of poliomyelitis in the community; an intensification of anxiety by the appearance of poliomyelitis in the family group; concern about exposure; subsequent development of an upper respiratory infection with attendant symptoms as well as the somatic expressions of anxiety in the form of neck stiffness, tightness in the throat and feelings of suffocation and weakness, and finally a localization of the weakness in one or more extremities as a conversion symptom, with a prompt return of function on reassurance and explanation.

North Carolina Medical Journal, Winston-Salem

8:267-330 (May) 1947

Atomic Bomb Experiments in the Pacific: Consideration of Relationship of Atomic Energy to the Future of Medicine. E. P. Pendergrass. —p. 271.
Experiences with Streptomycin Therapy: Review of Clinical and Laboratory Studies at Boston City Hospital. H. W. Harris and M. Finland. —p. 276.
Mortality in Thyroid Surgery. R. B. McKnight.—p. 282.
Outline for Diagnosis and Modern Treatment of Central Nervous System Syphilis. A. S. Rose.—p. 285.
Psychiatric Aspects of Gynecology and Obstetrics. J. H. Wall.—p. 290.
Locating the Appendix. G. L. Carrington.—p. 294.
Some Contributions to Peripheral Vascular Physiology and Their Therapeutic Implications. R. W. Wilkins.—p. 297
Biopsy of the Liver. N. A. Womack.—p. 300.
Bronchial Artery in Pulmonary Infarction. H. D. Bruner.—p. 306.
Congenital Cysts of the Lung: Report of 2 Cases. J. A. Moore.—p. 310.

Public Health Reports, Washington, D. C.

62:669-696 (May 9) 1947

*Technics of Application and Control of Roaches and Bedbugs with DDT. R. L. Stenburg.—p. 669.
A New Technic for Sampling the Density of Housefly Populations. H. I. Scudder.—p. 681.

Control of Roaches and Bedbugs with DDT.—Stenburg's investigation of various methods of applying DDT for roach control revealed that overall dusting with 10 per cent DDT powder of obvious cracks around baseboards, window frames and door frames, as well as applications in cupboards, trunks, cabinets and drawers, resulted in effective control of American roaches which were living inside the house. Roaches entering the house from the outside were effectively controlled, at least for the duration of this study, by treating the outside breeding places, such as incinerators, garages and garbage disposal places, with 5 per cent DDT spray and 10 per cent DDT dust, supplemented by dusting the ground immediately surrounding the house. DDT toxicity to bedbugs was investigated by treating groups of infested houses with various DDT sprays, using different solvents and in concentrations ranging from 2.5 to 35 per cent DDT. Extent of DDT treatment ranged from spraying only the mattress in the first group of houses to spraying the entire house and furniture in the fifth group. All methods of treatment used resulted in complete control of bedbugs for the duration of the study.

Review of Gastroenterology, New York

14:297-374 (May) 1947

Surgical Treatment of Lesions of Lower Bowel. H. E. Bacon, S. A. Linde and F. H. Murray.—p. 305.
Modern Gastroscopy: Observations. H. A. Monat.—p. 320.
Pathogenetic Nature of Hepatic Cirrhoses. A. O. Wilensky.—p. 331.
Effect of Ascorbic Acid on Cinchophen Experimental Peptic Ulcer. J. Nasio.—p. 340.

14:375-456 (June) 1947

SYMPOSIUM ON PSYCHOSOMATIC MEDICINE:

General Aspects of Psychosomatic Medicine: Historical Perspective. S. Paster.—p. 391.
Gastrointestinal Disorders in Military and Civilian Life. R. A. Savitt. —p. 403.
Gastroenterologic Aspects of Psychosomatic Medicine. S. A. Portis. p. 409.
Experimental Study of Changes in Gastric Function in Response to Varying Life Experiences. S. Wolf and H. G. Wolff.—p. 419.

Surgery, Gynecology and Obstetrics, Chicago

84:1019-1134 (June) 1947

Combined Thoracicoabdominal Approach, with Particular Reference to Its Employment in Splenectomy. B. N. Carter.—p. 1019.
Reoperative Surgery for Recurrent Peptic Ulcerations. M. E. Steinberg.—p. 1029.
Infections of Costal Cartilages and Sternum. H. C. Maier.—p. 1038.
Estimation of Acute Blood Loss by Tilt Test. D. M. Green and D. Metheny.—p. 1045.
Circulatory and Respiratory Distress from Extreme Positions on Operating Table. H. C. Slocum, E. A. Hoeflich and C. R. Allen.—p. 1051.
Effect of Mechanical Artificial Respiration on Maintenance of Circulation. S. A. Thompson and E. E. Rockey.—p. 1059.
*Study of Protein Hydrolysates, Ossein Gelatin and Glucose in Parenteral Nutrition. C. E. Koop, Cecilia Riegel, Rozanne P. Grigger and M. T. Barnes.—p. 1065.
*Aspiration Biopsy of Lymph Nodes: Critical Review of Results of 300 Aspirations. R. E. Meatheringham and Lauren V. Ackerman.—p. 1071.
Strength-Interval Curves and Repetitive Stimuli in Electrodiagnosis. L. J. Pollock, J. G. Golseth and A. J. Arieff.—p. 1077.
Cecostomy and Miller-Abbott Tube: Report on Their Combined Use in Preparation of Obstructed Large Bowel for Surgery. J. B. Millet.—p. 1083.
Supracondylar Shortening of Femur for Leg Length Inequality. R. D. Moore.—p. 1087.
Anal Ileostomy with Preservation of Sphincter: Proposed Operation in Patients Requiring Total Colectomy for Benign Lesions. M. M. Ravitch and D. C. Sabiston Jr.—p. 1095.
Tendon Transfer Operation for Irreparable Paralysis of Radial Nerve: Long Term Follow-Up of Patients. H. H. Young and G. H. Lowe Jr.—p. 1100.
Radical Amputations of Extremities in Treatment of Cancer. G. T. Pack, H. E. Ehrlich and F. de C. Gentil.—p. 1105.
Extensive Combined Thoracolumbar Sympathectomy in Hypertension. J. L. Poppen.—p. 1117.

Protein Hydrolysates in Parenteral Nutrition.—Koop and his co-workers studied the nitrogen balance in 22 fresh postoperative and in 4 nonoperative patients for five day periods during which food was provided parenterally by means of continuous intravenous infusions of solutions of glucose and various preparations of hydrolyzed protein. Gelatin was added in some instances to replace half of the hydrolysate, and in 3 instances it was used as the sole source of nitrogen. Positive nitrogen balance was obtainable by parenteral administration of protein hydrolysates, but the results were a little less satisfactory than when the protein hydrolysates were given by mouth. Positive nitrogen balance was not obtained by gelatin as the sole source of protein, but when one half of the protein hydrolysate was replaced by gelatin the results were slightly better than with hydrolysate alone. Nitrogen intakes as high as 0.69 Gm. of nitrogen per kilogram daily were successfully given for five day periods. When the nitrogen intake was 0.40 and 0.47 Gm. of nitrogen per kilogram daily, positive nitrogen balance was observed in 2 patients who were in negative caloric balance (10 and 12 calories per kilogram daily respectively). Venous thrombosis appeared to be the chief limiting factor in parenteral nutrition.

Aspiration Biopsy of Lymph Nodes.—Meatheringham and Ackerman studied 300 consecutive biopsies of lymph nodes performed on 245 patients who presented lymphadenopathy considered to suggest the existence of a neoplasm. One hundred and ninety-seven of the 300 aspirations were considered successful in that either tumor or lymphoid tissue was secured. One hundred and three cases represented technical failure to obtain sufficient tissue, but subsequent clinical course or further diagnostic procedures proved only 34 of these to be in error (11.1 per cent of total aspirations). Aspiration biopsy provides a reliable, safe, rapid and economical method of investigating lymph node enlargements. Its greatest value lies in the evaluation of nodes suspected of being the site of metastatic disease, particularly those regional nodes approximating foul and infected primary lesions. The decision as to operability or inoperability or the choice of treatment is facilitated by the establishment of the presence or almost certain absence of metastases in enlarged nodes. Aspiration biopsy also provides an accurate method of determining the presence of metastasis in patients to be treated by x-rays, and the size of the field may be chosen accordingly. It is emphasized that the diagnoses which were made in these aspiration biopsies were based entirely on paraffin sections and not on smears.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

5:181-228 (Dec.) 1946

Organization of Rheumatism Research and Treatment in Sweden. J. A. Höjer.—p. 183.
Problem of Chronic Rheumatism. L. T. Swaim.—p. 192.
*Herniation of Subfascial Fat as Cause of Low Back Pain: Report of 37 Cases Treated Surgically. R. Herz.—p. 201.
*Discussion of Paper by Ralph Herz: Herniation of Subfascial Fat as a Cause of Low Back Pain. P. S. Hench.—p. 204.
Present Swiss Concepts of Rheumatism and Physical Medicine. V. Ott.—p. 206.
Epidemic Myalgia Affecting the Trapezius Muscle. D. Wilson.—p. 211.
Personal Experience with Neostigmine Therapy in Rheumatoid Arthritis. M. Lucchesi and O. Lucchesi.—p. 214.

Surgical Treatment of Herniation of Subfascial Fat Causing Low Back Pain.—Herz presents anatomic and clinical evidence that cases of severe low back pain in which painful nodules can be palpated are due to herniation of subfascial fat through the deep layer of the superficial fascia. Temporary relief was obtained by injection of the painful areas with anesthetic solution in 109 cases of this type. In 37 cases the herniated fat was removed surgically, and in 34 there has been complete relief of all symptoms. This clinical entity is not uncommon. The presence of a painful nodule, with disappearance of pain after injection with anesthetic solution, is diagnostic.

Herniation of Subfascial Fat and Low Back Pain.—Hench points out that to Herz belongs the credit of presenting the first confirmation of the important work of Copeman and Ackerman on the fat herniations. He suggests that the treatment of such tender fat nodules need not necessarily be surgical. Copeman and Ackerman removed the nodules surgically for purposes of clinical demonstration. Herz operated in only 37 of his 109 cases. Copeman and Ackerman believe that surgery is not indicated in most cases and that the use of heat, massage and motion in such cases is rational. Physicians will probably treat such cases conservatively, but surgeons will probably treat them surgically. In selected or stubborn cases prompt surgical treatment of the nodules may save time and money. Hench calls attention to the parallelism existing between the development of our knowledge about herniated fat and herniated intervertebral disks as a cause of low back pain.

British Journal of Industrial Medicine, London

4:1-76 (Jan.) 1947

Historical Relationship of Mining, Silicosis and Rock Removal. T. Holman.—p. 1.
Control and Elimination of Silicosis in West Coast Hematite Iron Ore Industry. J. Craw.—p. 30.
Byssinosis in Cotton Trade. C. I. C. Gill.—p. 48.
Studies in Occupational Morbidity. W. T. Russell, G. P. B. Whitwell and J. A. Ryle.—p. 56.
Hand of the Plant Potter: A Stigma of the Market Gardener. H. Cohen.—p. 62.

British Medical Journal, London

1:707-750 (May 24) 1947

Epidemiology of Tuberculosis. J. W. S. Blacklock.—p. 707.
Oxygen Poisoning in Man. K. W. Donald.—p. 712.
*Acute Nonspecific Diarrhea and Dysentery: Local Chilling of Abdomen as a Causative Factor. G. R. Kershaw.—p. 717.
*Epidemic Diarrhea and Vomiting. E. R. Hargreaves.—p. 720.
Fatal Poisoning by "Lethane" Insecticide. C. V. Harrison.—p. 722.

Chilling of Abdomen and Acute Nonspecific Diarrhea and Dysentery.—Kershaw says that acute enteritis of unknown origin is common in Europeans visiting hot climates and is extremely frequent in ships. Reviewing observations made on ships during the war, the author says that typically the patient was awakened with generalized abdominal colic and an urgent call to defecate. In mild cases a few loose stools and waning bouts of colic saw the end of the attack by the following midday, but in severe cases the colic persisted and the stools became watery, progressing even to mucous and blood stained, and the course lasted several days with prostration and anorexia and a slightly raised temperature. The frequency of small and large outbreaks was in contrast to the exceptional rarity with which known pathogens were detected. Local chilling of the abdomen is a known cause of diarrhea. Circumstances causing local chilling are common in hot climates and extreme in overcrowded ships in which the plenum system of ventilation is used. Clinical observations are cited which indicate that chilling of the abdomen or anterior abdominal wall is a common cause of acute nonspecific enteritis. On entering a hot climate the change from thick to thin clothes should be made gradually. Cool drinks should be sipped slowly, and sitting in the direct draft of forced ventilation for long periods should be avoided. At night the abdomen should be protected by a cholera belt or a blanket.

Epidemic Diarrhea and Vomiting.—Hargreaves describes two outbreaks of diarrhea and vomiting occurring at two county institutions in Cornwall during 1946. These outbreaks were part of an epidemic among the surrounding population. With the exception of three deaths, all of aged patients, symptoms were mild and conformed to previous epidemics reported in the literature. Evidence obtained from these Cornish outbreaks points to an airborne disease with an incubation period of seventy-two hours, the port of entry being either the upper respiratory or the gastrointestinal tract; the organism is probably a virus. There is strong evidence that epidemic diarrhea and vomiting of newborn babies is not caused by the same organism as that in adults.

Lancet, London

1:699-734 (May 24) 1947

Stories of Endocrine Research. E. C. Dodds.—p. 699.
Zygomatic Mastoiditis. P. Reading.—p. 702.
Recovery of Stretch Reflexes After Nerve Injury. D. Barker and J. Z. Young.—p. 704.
Virulence of Strain of Vole Acid-Fast Bacillus (G564). J. A. Young and J. S. Paterson.—p. 707.
Release of Proteolytic Enzyme in Anaphylactic and Peptone Shock in Vitro. G. Ungar.—p. 708.
Failure of Oil Soluble Anesthetics to Give Prolonged Analgesia. M. Kelly.—p. 710.
Salmonella Enteritidis Infection Associated with Use of Anti-Rodent "Virus." Jean Orr-Ewing, J. G. Dathan, A. J. McCall and Joan Taylor.—p. 711.

1:735-774 (May 31) 1947

Group Technics in a Transitional Community. A. T. M. Wilson, M. Doyle and J. Kelnar.—p. 735.
Cerebral Thrombosis in Young Adults. L. Krainer.—p. 738.
Cerebrospinal Meningitis in the Gold Coast: Review of 9,864 Cases. M. P. Browne, B. B. Waddy and R. W. Tudor.—p. 741.
Treatment of Ruptured Urethra by Bladder Traction. P. Martin.—p. 743.
*Progesterone in Treatment of Migraine. I. Singh, I. Singh and D. Singh.—p. 745.
Cerebral Angiomata in an Icelandic Family. H. A. Kidd and J. N. Cumings.—p. 747.
*Penicillin in Postoperative Progressive Bacterial Synergistic Gangrene: Report of Case. S. H. C. Clarke.—p. 748.
Estimation of Vitamin C in Leukocytes by Hydrazine Method. P. Constantinides.—p. 750.

Progesterone in Treatment of Migraine.—According to the Singhs the etiology of migraine is varied. Among 30 women with migraine who had responded poorly to the usual therapeutic methods they found 23 with clinical evidence of estrogen hyperactivity. In all of these it was shown that estrogen would precipitate an attack. In all 23 cases progesterone was effective in relieving or preventing attacks of migraine. Various associated symptoms also disappeared with its use. The name "estrogenic migraine" might be appropriate for this condition.

Penicillin in Postoperative Progressive Bacterial Synergistic Gangrene.—A printer aged 49 was hospitalized with a perforated duodenal ulcer. Laparotomy was performed, and a small perforation on the anterior surface of the first part of the duodenum was sutured. On the seventeenth day two patches of gangrene appeared on each side of the incision. The gangrene slowly spread. A course of 1,000,000 units of sodium penicillin (20,000 units intramuscularly every three hours) was started on the eighteenth evening. Locally, penicillin cream and dry dressings were applied alternately. After three days the condition had stopped spreading, and healing followed rapidly. Clarke says that gangrene may develop in the abdominal skin after drainage of foul intraperitoneal abscesses, gangrenous appendicitis, perforated duodenal ulcers or other conditions in which the incision has been contaminated with intestinal organisms. It may also develop after the drainage of lung abscesses or fetid empyema in the skin of the chest wall. Most of the reported cases have arisen in the region of tight sutures, which are undoubtedly a predisposing cause. Many cases have been diagnosed late, and these have often proved fatal. With early effective radical operation recovery usually occurs, often with considerable loss of skin and scarring. It is hoped that with penicillin the mortality and scarring may be reduced.

Proceedings of Royal Society of Medicine, London

40:263-346 (April) 1947

Emergency Epistaxis. Josephine Collier.—p. 277.
Anterior Ethmoidal Hemorrhage. R. G. Macbeth.—p. 280.
Analysis of Function. H. E. Griffiths.—p. 293.
Morphologic Level of Personality. J. M. Tanner.—p. 301.
Severe Infections of Mandible. D. G. Walker.—p. 309.
Regional Osteitis Fibrosa Affecting the Facial Bones: 2 Cases. M. A. Rushton.—p. 316.

South African Medical Journal, Cape Town

21:253-292 (April 26) 1947

Laboratory Aspects of Some Recent Advances in Medicine. M. van den Ende.—p. 255.
Right Iliac Pain. J. F. Haegert.—p. 263.
*Pyelo-Adreno-Neural Syndrome: I. Symptomatology. G. W. H. Schepers.—p. 271.

21:293-336 (May 10) 1947

Menopausal Arthritis. A. Raff.—p. 294.
*Pyelo-Adreno-Neural Syndrome: II. Pathogenesis. G. W. H. Schepers.—p. 299.
Hydrolyzed Protein. H. Watkins-Pitchford.—p. 304.

Pyelo-Adreno-Neural Syndrome.—Schepers presents evidence for a pyelo-adreno-neural syndrome based on a study of 50 cases culled from an accumulation of Reef Benefit Society chronically sick patients. The author computed that the incidence of this syndrome is at least 0.2 per cent in a potential reservoir of 50,000 subjects. He describes 2 representative case histories which illustrate two major varieties of the pyelo-adreno-neural syndrome. Case A emphasizes the role of the adrenal cortex in the genesis of the symptoms. Case B directs attention to the adrenal medulla, the case also being an example of a relatively chronic disorder. Case histories tend to fall under one of at least four clinical groups, depending on whether the functions of the cortex or the medulla of the adrenal are stimulated or suppressed. In addition, a large proportion of cases must be regarded as panadrenal syndromes, in which there may be combinations of cortical and medullary overaction or underaction, or cortical overaction plus medullary failure, or both. While the patient is being studied, the clinical emphasis may shift from the cortex to the medulla (or the reverse), and hyperfunction may succeed or precede hypofunction. Tables are presented which analyze (1) the general clinical features, (2) symptoms referable to the alimentary, cardiovascular and hemopoietic systems and (3) features referable to the urogenital and nervous systems. The author analyzes the biochemical features of selected cases and illustrates in a diagram anatomic and physiologic mechanisms involved in the pyelo-adreno-neural syndrome. It is a condition distinct from well known endocrine syndromes but also partly related to them. The primary role of the upper urinary tract is stressed in pathogenesis. The disease may involve the adrenal gland and celiac plexus by virtue of inflammatory, degenerative, neuroreflexive, vascular and obstructive mechanisms. The pyelo-adreno-neural syndrome probably reflects the existence of a pyelo-adreno-neural mechanism which owes its significance and peculiar vulnerability to the intricacy of its phylogenesis.

Presse Médicale, Paris

55:313-324 (May 10) 1947

*Treatment of Gastroduodenal Ulcers with Intravenous Injection of Milk Proteins. G. Faroy, J. Arnous and J. Fénéon.—p. 313.
Anaphylactic Shock and Serum Cholesterinase. E. Aron and A. D. Herschberg.—p. 314.

Intravenous Injection of Milk Proteins for Gastroduodenal Ulcers.—Faroy and his associates use a preparation consisting of defatted milk 0.50, dextrose solution 2.25 and sodium thiosulfate 2.25. In the presence of an active ulcer the patient is given a total of from fifteen to eighteen intravenous injections at the rate of three injections per week in increasing doses. At the first injection the authors usually give 1 cc. of the preparation, which contains 0.1 cc. of milk. After that the doses are 2, 3, 5, 8 and 10 cc. The 10 cc. dose is rarely exceeded. Contraindications to this form of treatment are the same as those to other forms of shock treatment, that is, active pulmonary tuberculosis, nephritis and decompensated heart disease. When the series of injections has been completed, a roentgenologic control is made of the ulcer niche and, if necessary, the injections are continued. The treatment has given favorable results comparable to those obtained with a formerly available preparation which contained a solution of peptone of casein. Permanent cure of the tendency to ulceration is of course as impossible with this as with other methods, but it rapidly controls the acute attack and prevents recurrences if it is given periodically once or twice a year in the form of a series of twelve injections given at the rate of two a week.

Annales Paediatrici, Basel

168:113-168 (March) 1947

Syndrome of Mauriac (Retardation of Height Growth and Disturbances of Fat Distribution in Diabetic Child) and Its Relation to the Glycogenic Disease of Van Creveld von Gierke. R. Houet.—p. 113.
*Case of Toxoplasmosis with Recovery. P. Robinson.—p. 135.
Juvenile Form of Hereditary Diffuse Cerebral Sclerosis (Type Scholz). Cornelia De Lange.—p. 138.
*Case of D Vitamin Intoxication. M. Skatvedt.—p. 149.

Recovery in Case of Toxoplasmosis.—Robinson observed a girl, aged 9, who after two weeks of high fever developed neurologic symptoms. There were strabismus, nystagmus, chorioretinitis, absent abdominal reflexes, positive Kernig's sign, absent knee and ankle jerks and positive Babinski sign. Lumbar puncture revealed normal fluid which contained Toxoplasma parasites. The fluid of the second and third lumbar punctures coagulated immediately and also contained encysted and free Toxoplasma parasites. Treatment with sulfathiazole 0.75 Gm. four hourly and emetine 0.015 Gm. daily continued for twelve days, resulted in clinical recovery. However, nine days after treatment was discontinued the temperature rose again and some of the neurologic symptoms reappeared. Treatment was resumed and continued for six more days, after which the child made a complete recovery.

Vitamin D Intoxication.—A girl aged 1 year who by mistake had been given for six months a concentrated vitamin preparation containing 250,000 units per cubic centimeter instead of the supposed 15,000 units had received 6,500,000 international units, the equivalent of thirteen massive doses. Her health became impaired, she had attacks of vomiting and she lost weight. The calcium content of the blood was about twice the normal value. The nonprotein nitrogen of the blood was increased and isosthenuria existed. X-rays showed a hypercalcified zone in the metaphysis. Electrocardiography revealed changes in the T waves. After two and a half months most pathologic changes had disappeared. The only treatment the child was given was that the urine was kept acid by the administration of ammonium chloride until the blood calcium was normal, because the phosphates of calcium precipitate more readily in alkaline urine, and it is in the period when the blood calcium decreases that the risk of metastatic calcifications is greatest. To avoid overdosing with vitamin D, the author suggests that the concentrated preparations should not be used in ordinary practice and they should be dispensed in specially marked bottles.

Schweizerische medizinische Wochenschrift, Basel

77:443-466 (April 19) 1947. **Partial Index**

Hammer Toes and Avoidable Amputations. R. W. Decoppet.—p. 443.
Observations on Patients with Thrombopenia During Splenectomy. K. Lenggenhager.—p. 449.
Traumatic Reflex Dystrophy of Extremities. R. Leffmann.—p. 451.
*Internal Treatment of Gastric and Duodenal Ulcer. A. W. Surkes.—p. 455.
Cholinesterase in Cancer Patients and Mice with Tumors. H. W. Schmidt.—p. 458.

Internal Treatment of Gastric and Duodenal Ulcers.—Surkes points out that American physiologists have tried a number of hormone-like substances from the gastrointestinal mucosa in the treatment of gastric and duodenal ulcers and says that similar experiments have been carried out in Switzerland since 1937. He reviews observations on 92 patients who were given this type of substitution therapy. In the presence of active ulcer symptoms the preparation is administered both by intragluteal injection and by mouth. The number of injections varies between twelve and twenty-one. Oral medication by means of tablets is continued for from three to four weeks after completion of the series of injections. As regards diet the patients were told to refrain from eating the coarser types of the vegetables of the cabbage family and beef as well as foods that they knew from experience would not agree with them. Favorable results were obtained in 82 per cent of the patients with gastric and in 92 per cent of the patients with duodenal ulcer. Questionnaires from one to four years after treatment revealed some recurrences, but the author thinks that occasional prophylactic administration of the tablets might help to prevent recurrences.

Hospital, Rio de Janeiro

31:671-814 (May) 1947. Partial Index

Shigella Alkalescens Type III Neter.. A. De Assis.—p. 671.
Giant Cell Tumor; Kineplasty of Hand. J. DeM. Grey.—p. 685.
Campaign Against Tuberculosis. V. Souto.—p. 697.
Cancer of Bladder. J. B. Viana.—p. 725.
*Blood Changes in Rat Following Benzpyrene Sarcoma. C. A. Salvatore. —p. 751.
*Tropical Eosinophilia. W. Telles.—p. 759.

Blood Changes in Rat with Benzpyrene Sarcoma.—Salvatore studied the blood picture of normal adult rats and of rats in which tumors had been induced by the subcutaneous injection of an oily solution of benzpyrene. He observed that neutrophil leukocytosis, monocytosis and oligocythemic anemia developed in the rats with sarcomas. There was a direct relationship between the severity of the blood changes and the size of the sarcomas. The author thinks that the blood changes depend at least partly on the intraneoplastic hemorrhages.

Tropical Eosinophilia.—Telles observed in a child aged 19 months the clinical, roentgenologic and hematologic aspects of the condition described by Weingarten as tropical eosinophilia. There were cough with nocturnal paroxysms, mild fever, anorexia, failure to gain weight and cervical, axillary and inguinal micropolyadenia. The x-ray examination revealed an extensive mottling of micronodular shadows over both lung fields, with increased hilar images. Examination of the blood showed a leukocytosis of 2,800 to 38,500, of which 35 to 53 per cent were eosinophils. Eggs of Necator and Trichiuris were found in the feces, but it is noteworthy that all symptoms and findings remained after treatment of the verminosis. Intramuscular injection of an arsenical resulted in improvement of clinical symptoms, with a tendency to normalization of the white blood cell count. Reviewing the literature on this condition, the author points out that the differentiation between tropical eosinophilia and Löffler's syndrome is not clear.

Medicina Colonial, Madrid

9:291-350 (April 1) 1947. Partial Index

*Endemic Malaria and Prevention with DDT in Spanish Morocco. A. Irigoyen Ramírez and S. Medina Wahnon.—p. 302.

Malaria.—Spanish Morocco is a zone of endemic malaria. Prevention has been difficult up to now because of (1) the anthropophilic type of mosquitoes, (2) the ignorance of the Mussulmans and (3) immigration of people from nonmalarial zones. Plasmodium strains increase in virulence through passage in the blood of immigrants without previous warning and cause endemic malaria even among those who have been warned. This is the case whether the newcomers change from normal to malarial zones or the reverse. The authors report satisfactory results from the use of DDT on eggs, larvae, nymphs and adult mosquitoes. The antimosquito effects of DDT are prolonged, the drug is nontoxic for Gambusia fish and for cattle, and it is economical and easy to use.

Revista de la Assoc. Med. Argentina, Buenos Aires

61:1-78 (Jan.-Feb.) 1947. Partial Index

Penicillin in Meningitis. C. A. Videla.—p. 1.
Penicillin in Osteomyelitis. F. O. Alarcón.—p. 5.
*Clinical Course and Treatment of Bubonic Plague. C. A. Videla.—p. 15.

Bubonic Plague.—During the first two weeks of December 1946, 5 persons in a suburban district of Buenos Aires were hospitalized with a diagnosis of bubonic plague. Four of the 5 patients had septicemia and were in a grave condition. Two adolescent patients were actually ill with septicemia and 1 with plague meningitis. Administration of antiplague serum for the first three days in the course of the disease was ineffective. The patients were given intramuscular injections of streptomycin. The patient with meningitis received in addition two intracisternal injections of streptomycin in doses of 125 mg. and 100 mg. each, with an interval of eight hours between the injections. All the patients recovered.

Maandschrift voor Kindergeneeskunde, Leyden

15:89-120 (March) 1947

*Exchange Transfusion in Treatment of Erythroblastosis Fetalis. J. M. Soeters.—p. 89.
*Role of Pediatrician and Family Doctor in Efforts to Solve Problem of Rubella and Congenital Defects. Elizabeth Kamerbeek and P. H. G. van Gilse.—p. 96
Active Immunization Against Diphtheria. E. Gorter.—p. 101.
*Influence of Folic Acid on Symptoms of Celiac Disease. W. H. H. Tegelaers and H. A. Weyers.—p. 107.

Exchange Transfusion in Treatment of Erythroblastosis Fetalis.—Soeters discusses indications for exchange or replacement transfusions in newborn infants with erythroblastosis fetalis and presents observations on 2 newborn infants in whom a modification of Diamond's technic was used for the replacement transfusion. A formula is given to estimate the concentration of donor blood at the end of the exchange. Roentgenograms show the position of the catheter and reveal the passage through the umbilical vein and the ductus venosus.

Role of Pediatrician and Family Physician in Solving Relationship Between Rubella and Congenital Defects.—Since it is almost certain that rubella (German measles) when contracted by the mother during the first months of pregnancy may be the cause of congenital anomalies in the child, Kamerbeek and van Gilse suggest that physicians should be asked to report positive and negative observations on this problem. They should also obtain throat and nose washings and blood in order that a virus may be sought in cases with manifest rubella exanthem as well as in contact cases. They should collect convalescent serum.

Folic Acid in Celiac Disease.—Tegelaers and Weyers treated 7 children with celiac disease by giving them daily for thirty days 10 mg. of folic acid by mouth. Fat resorption improved in all the children. Most of them showed an increase in weight, and in all except 1 the general condition improved. However, there was no noticeable reaction in the hemopoietic system.

Nordisk Medicin, Gothenburg

33:675-714 (March 14) 1947

Bronchoscopy in Bronchial Asthma. K.-G. Rimér.—p. 675.

Hospitalstidende

Urethane Treatment of Leukemia. A. Videbæk.—p. 680.

Norsk Magasin for Lægevidenskapen

*Infectious Mononucleosis, Its Frequency and Forms. H. Heyeraas. —p. 687.
Tuberculosis of Conjunctiva. B. Foss.—p. 690.

Hygiea

Epileptoidism or Ixoidism. K. G. Dahlgren.—p. 695.
Serologic and Clinical Observations on Epidemic Typhus in Sweden in 1945. E. Hammarström, H. Hellsten and J. Fahræus.—p. 700.

Infectious Mononucleosis.—Heyeraas says that, through systematic examinations of the blood with differential count carried out from 1943 to September 1946 in the epidemic division of Trondheim Hospital in all cases of angina, 23 cases of infectious mononucleosis were diagnosed, of which 15 were between the ages of 15 to 20. No epidemiologic connection was demonstrable. Clinically the 13 cases of membranous angina were hardly to be distinguished from diphtheria. In 6 cases there was generalized enlargement of the lymph nodes, in 17 only enlargement of the cervical lymph nodes. On the continent of Europe the pseudomembranous is the most frequent type of infectious mononucleosis; in England and America the glandular type is most often described. Pathologic lymphatic monocytelike cells are pathognomonic for the disease and dominate the blood picture during the first days. The Paul-Bunnel test, done in 18 cases, was positive in 12. It is a valuable aid in differential diagnosis with regard to acute leukemia. In 1 instance herpes genitalis with exanthem was seen.

Book Notices

Obstetrical Practice. By Alfred C. Beck, M.D., Professor of Obstetrics and Gynecology, Long Island College of Medicine, Brooklyn, N. Y. Fourth edition. Cloth. Price, $7. Pp. 966, with 1,068 illustrations. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore 2, 1947.

Dr. Beck sets out to present this edition in a concise form for undergraduate students and young practitioners. He has reduced references intentionally and avoided controversy as much as possible. The text and references cover 921 pages. The book is divided into forty-seven chapters. The book is covered thoroughly by a forty-three page index. The book is illustrated rather profusely with a series of drawings which are easily followed. The first three chapters, dealing with the ovarian cycle, menstruation and ovulation, present the author's views adequately. The detail of information is illustrated by the diagram on page 67 showing five variations of placental barriers of different animals. In chapter 12 the mechanism of labor is carried through consistently. However, the implied vascularity of the cervix according to figures 159 to 161 might be objected to. The management of the shoulders on page 309 would give the impression to the inexperienced that much force could be used with safety, though this was not the intention of the author. An error of the printing is corrected by a loose page, as page 388 is in the reverse of 385. An error in the index is found in the reference to syphilis, in which there was a difference of one page. This is not serious and may be accounted for easily. The emphasis on alkalization of the urine for pyelitis seems out of date in view of the procedures used by most obstetricians at the present time. Beck states that "syphilis is one of the commonest causes of fetal death in the latter half of pregnancy." Reports from other institutions are in discord. The emphasis on the value of the cord blood Wassermann test for diagnosis of syphilis of the newborn is subject to criticism.

Special commendation is offered on the chapters on faulty passages and soft part dystocias. This chapter is particularly well illustrated. The discussion of the bony pelvis is presented in an analytical fashion. In a book in which brevity was desired it would seem that the author has at times allowed interest in pathologic changes to be overstressed. In the chapter on puerperal infection insufficient space has been set aside for the discussion of the use of blood, sulfonamides and antibiotics. A conflict is expressed on the use of the bougie in which he adds "It therefore should be the method of choice by those who lack obstetrical skill and as often employed by experienced operators in those cases in which a more rapid and more certain method is not indicated. . . . On the other hand, a maternal mortality of slightly over 1 per cent does not justify its indiscriminate use." In the section on lacerations the colored zones of laceration are quite impressive.

Beck's students and all of his disciples will find this book valuable and helpful. Many portions of it can be studied profitably by undergraduate as well as graduate students.

Genetics, Medicine, and Man. By H. J. Muller, Professor of Zoology, Indiana University, Bloomington, Indiana, C. C. Little, Director, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, and Laurence H. Snyder, Chairman, Department of Zoology and Entomology, Ohio State University, Columbus, Ohio. Fabrikoid. Price, $2.25. Pp. 158, with 29 illustrations. Cornell University Press, 124 Roberts Place, Ithaca, N. Y.; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1947.

This book contains the text of the six Messenger lectures delivered at Cornell University in the autumn of 1945. Dr. Muller, Nobel laureate in medicine, presents in masterful fashion the elementary principles of modern genetics. With the use of clear and simple diagrams he follows through the several steps of mitosis and meiosis. He considers such problems as the role of genes and environment in differentiation, gene duplication and gene mutation, both natural and induced. On this background he discusses the meaning of sexuality as a mechanism for the recombination of genetic differences in diverse stocks, leading to new adaptive combinations and progressive steps in evolution.

The chapters by Dr. Little on parental influence and growth and individuality contain much interesting and significant material on mammalian inheritance, and the possible application of these findings to medical research, particularly as applied to cancer. However, a rather artificial division of advances in mammalian genetics under three major groupings of so-called morphogenetic, emotional-endocrine and physicosocial factors and environments and the strange use of the term "environmental level" for the categories of characters genetically determined will certainly prove confusing if not misleading to the general reader, for whom the book is largely intended. Dr. Little emphasizes the importance of increased and diversified programs of research on mammalian genetics as a means to a better understanding of the human organism in health and disease.

In the chapters on human heredity and on the mutant gene in man Dr. Snyder presents an excellent summary of modern knowledge of human genetics. He reviews the methods of collecting data on human heredity, considers the relative roles of heredity and environment and discusses the practical application of genetic knowledge to prognosis, diagnosis and prevention of disease. He also considers the medicolegal applications of genetics. Many readers will find his summary of human blood groups, of which there are now some 2,500 distinct combinations of factors known, of particular interest. He outlines the spatial relations of genes, i. e. their positions in the chromosome complex. His discussion of the physiologic relations dealing with the variability of expression and effects on viability will be of particular interest to those who may have thought of hereditary factors either as not subject to treatment or as relatively unimportant in their effects. Under ontogenetic relations he considers such subjects as dominance, gene interaction and multiple factors. He concludes with a simple presentation of gene and genotype frequencies in human populations, the phylogenetic relations of the mutant gene in man. This section of the book will be of great value to all those interested in human biology and medicine.

Progress in Gynecology. Edited by Joe V. Meigs, M.D., Clinical Professor of Gynecology, Harvard Medical School, Boston, and Somers H. Sturgis, M.D., Chief, The Vincent Memorial Hospital Laboratory, Boston. *Cloth.* Price, $7.50. Pp. 552, with illustrations. Grune & Stratton, 443 Fourth Ave., New York 16, 1946.

One of the justifications for this volume is ". . . at this particular time for the purpose of refreshing and bringing up to date those medical men who have spent the last years in the armed forces of their country and who have been far removed from the practice of the diseases of women." To this end the editors laid special emphasis on the endocrine system, neoplasms and operative technics. The book is divided into sections, each on a symposial basis. The authors of each chapter are for most part well known and acknowledged authorities. Meigs and Sturgis deserve credit for the organization and placement of the respective papers.

Many of the chapters are unusually well done for a book of this purpose. Special credit is due such authors as M. Edward Davis on gonadotropins, U. J. Salmon on androgen therapy, Richard W. TeLinde on "intraepithelial carcinomas," Louis K. Diamond on the Rh factor and Champ Lyons on chemotherapy. TeLinde demonstrates his views by clear illustrations and direct presentation of his thesis. Diamond does as well on the Rh and its relations to transfusion.

Helene Deutsch presents some aspects of the psychiatric component in gynecology but avoids sex and marital problems. This void is the more conspicuous since Dr. Deutsch is particularly able to present this difficult subject. Repetition and confliction of ideas and treatment are more frequent than the hurried reader would desire. For the same reason many practitioners will find moral support for their procedures.

The chapter on dysmenorrhea and the one on leukoplakia, pruritus and senile changes must have been done under pressure. Certainly Keefer might have written more than three and one-half pages on penicillin on infection of the female pelvis.

It would appear that the volume would be of more value to physicians away from metropolitan areas and medical centers. The names alone of some of the authors will ensure sales of the volume. The book is interesting as a whole.

The publishers deserve praise for using a good quality paper, making good reproductions of illustrations, employing a clear, easy to read type and compilation into a well bound volume. Evidence that such a volume has a place is documented by the fact that sixty-nine other authors, most of them with national and international reputations, joined Meigs and Sturgis in this scientific literary effort.

Tratado de patología digestiva. Volumen II: Patología intestinal. Por Carlos Bonorino Udaondo y Mariano R. Castex. Fabrikoid. Pp. 1,297, with 625 illustrations. Lopez & Etchegoyen, S. R. L., Junin 863, Buenos Aires, 1946.

This huge volume was written by a number of authors, all leaders of medicine in the Argentine. Naturally, it contains a tremendous amount of information about diseases of the intestine. It is for the most part well written and it is well illustrated. Most of the chapters have many references to the literature. Unfortunately for a book of this size and coverage, it lacks an index.

Many of the articles, like the one of Calixto Nuñez on tuberculosis, are excellent, while others appear to have been quickly and carelessly written by an assistant in a library. If a new edition should ever be called for it is to be hoped that the editor will get more of the authors to write from their own clinical experience. This would make the book much more attractive and useful. It would help also if the editors were to cut out chapters on questionable diseases such as "the mobile duodenum" or "the dilated duodenum" or "duodenal diverticula" and to assign the space to a better discussion of common troubles such as constipation, flatulence, diarrhea and the sore colon.

A remarkable chapter is the one on foreign bodies that have been found in the rectum. They include such objects as beer bottles and tea cups!

The editors are to be congratulated on the production of such an encyclopedic volume, much like the great handbüche of prewar Germany. As already noted, the only regrettable feature is that as one reads here and there one does not find that the many writers put in enough of their own clinical experience and wisdom.

Penicillin in Syphilis. By Joseph Earle Moore, M.D., Associate Professor of Medicine and Adjunct Professor of Public Health Administration, the Johns Hopkins University, Baltimore. Fabrikoid. Price, $5. Pp. 319, with 57 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1946.

With characteristic thoroughness Moore presents the essential points of penicillin therapy in easily understandable form. Those interested in the clinical use of penicillin will find the section on penicillin in early syphilis very valuable. The same applies to the chapters on syphilis in pregnancy, congenital syphilis, benign late syphilis, cardiovascular syphilis and ocular syphilis. Following a detailed discussion of treatment in these forms of syphilis the author gives a short, pertinent summary of results. Nearly half of the text is devoted to fundamental information on the chemistry, pharmacology, therapeutic activity and mode of action of penicillin. The section on the pharmacology of penicillin in the central nervous system contains timely advice, and the chapter on toxicity is of special interest to the practitioner. Those who plan to read this book will be disappointed if expecting to find solutions for all of the problems of penicillin therapy in syphilis. Neither the lapse of time nor the number of patients treated since the discovery of penicillin has been sufficient to provide answers for all the questions that arise. This is forcefully brought out in the text, and the detailed reasons are presented in all stages and in most of the complications of syphilis.

Maladies et syndromes rares ou peu connus: Description clinique—répertoire des signes et liste des noms propres. Par A. Aimes, professeur à la Faculté de médecine de Montpellier, Montpellier. Préface du Professeur E. Jeanbrau. Paper. Price, 300 francs. Pp. 207, with 26 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6ᵉ, 1946.

This brief volume on rare or little known diseases and syndromes contains the collection of diseases and syndromes which appear in literature under eponyms, some of them little known. A brief description of the clinical aspects accompanies each name. In view of the fact that modern medical dictionaries contain the same information, the value of the volume, particularly to the American physician, is questionable.

The Ranks of Death: A Medical History of the Conquest of America. By the late Colonel P. M. Ashburn. Edited by Frank D. Ashburn. Cloth. Price, $5. Pp. 298. Coward-McCann, Inc., 2 W. 45th St., New York 19, 1947.

When Colonel Ashburn died in 1940 the manuscript of this book was found in his effects. His son, Frank D. Ashburn, who had often discussed the book with his father, took over the task of editing and preparing the manuscript for publication. The result is a somewhat disorganized but very readable little volume that should be of interest both to physicians and to the lay public as well. By means of a foreword, and introductory material at the beginning of many of the chapters, the editor manages to give a unity and progression to the story which should make it acceptable to the reading public. By including technical material, historical quotations and references in the appendix, the editor makes the book a really valuable addition to the physician's library. The general thesis developed is that "nearly every part of America was healthful and many parts teeming with population when the whites first came"; that the invasion of the continent by the European nations brought in diseases such as smallpox, measles and tuberculosis to which the Indians were not immune and to which they fell easy prey; that the importation of Negro slaves with their malaria, typhus and dysentery was an even greater blow to the native Indians; that the Indian was defeated not only because he lacked firearms, horses and iron but also because he lacked immunity against most of the diseases which both the whites and the blacks brought with them. It is an interesting thesis, well developed if not profusely documented. While the physician will find much that is old to him, there is a fresh point of view which is well worth an evening getting.

A Book for Us Diabetics and Our Doctors. By Don H. Duffie, M.D. Fifth edition. Cloth. Price, $2.25. Pp. 100, with illustrations. The Author, Central Lake, Michigan, 1946.

In this little book a country doctor with thorough understanding of diabetes and its treatment explains for the benefit of his patients and their physicians how diabetes can be expertly treated by simple means available to every one. There is nothing bewildering about the management of diabetes and no good reason for the attitude of some physicians that if diabetic patients cannot be under the direct care of specialists they might better continue to be left to die. The great advantage in attending a good diabetic clinic is that the patient there meets others who despite the same infirmity and with no better education have learned to overcome the handicap of diabetes. For those who cannot go to such a clinic and for their home physicians this volume will prove immensely useful.

Behandlung von Augenkrankheiten: Orientierung für den praktischen Arzt. Von P.-D. Dr. A. Bangerter, Chefarzt der Augenklinik St. Gallen, St. Gallen, Switzerland. Paper. Price, 4 Swiss francs. Pp. 103. [Sole *distributors for the U. S. A. and Canada*: Grune & Stratton, Inc., 381 Fourth Ave., New York.] Hans Huber, Marktgasse 9, Bern, 1946.

This book on the treatment of diseases of the eye is written for the general practitioner. It is brief and without illustrations. There is a six page list of drugs, many proprietary, for use in the treatment of eye diseases. The first twenty-five pages are devoted to injuries of the eye and lids. The next twenty-three pages deal with inflammations of the lids and tear sac. There are ten pages on conjunctivitis, ten on the cornea, nine on iris and lens, five on the fundus and four on squint. The book is of little value even to the general practitioner and will find no market in the United States, where many more complete and illustrated volumes in English are available.

For Doctors Only. By "Hugh Selwyn." Paper. Price, 5s. Pp. 64. W. E. Harrison & Sons, Ltd., The Ancient House, Ipswich, [n. d.].

British physicians are much more likely to indulge in slightly facetious essays relating to the practice of medicine than are physicians of most other countries. The name Hugh Selwyn is apparently a pseudonym, since the name of the author is placed in quotes. Most of the essays in this little pamphlet were published in the *London Hospital Gazette*. The essays in this instance are presumably conversations between an old time general practitioner and a young man about to undertake a similar form of practice. The essays strike a responsive note in their reminiscences for any one who has dealt with what is called "the mine run" of patients.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

AMEBIASIS

To the Editor:—1. What is the annual number of deaths in the United States from amebiasis and the number who have severe complications such as liver abscess, brain abscess and amebic hepatitis? In other words, what are the chances on a percentage basis for the average patient to die from the disease or suffer one of its serious complications? On the basis of the answers to these questions, how vigorously is one justified in treating the average patient? 2. Is it considered likely that a patient may have amebic hepatitis or liver abscess with neither fever, leukocytosis nor elevation of the sedimentation rate? Would such a case be considered commonplace or a rarity? 3. How reliable is the complement fixation test in making or excluding the diagnosis of amebiasis in a case in which the organisms cannot be demonstrated in the stools? 4. What textbook is recommended for a thorough description, with illustrations of the characteristic lesions of amebiasis as seen through the sigmoidoscope? 5. In the disease considered to be a common cause for such vague complaints as slight griping or tenderness in various parts of the abdomen, slight tenderness in the region of the liver or malaise and lassitude not associated with anemia, fever or other discernible causes?

Weldon J. Walker, Lieutenant Colonel, M. C., U. S. Army.

Answer.—1. Reports of the incidence of infection with Endameba histolytica range from as low as 0.05 per cent in a Philadelphia hospital to 55.5 per cent in a New Orleans orphanage. According to Faust the incidence in most parts of the United States varies from between 5 and 10 per cent, being high in some areas such as the rural Southern Appalachians and as low as 1 per cent in some Northern areas. An incidence of 20 to 25 per cent has been reported among servicemen returning from the Orient. Faust states that "amebic invasion of the liver is probably much more common than the records of acute hepatic amebiasis indicate." Craig states that liver abscess occurs in approximately 15 to 20 per cent of persons who have suffered from attacks of amebic dysentery. Faust also reports that 10 per cent of patients with appendicitis in the surgical service of Dr. Alton Ochsner in the Charity Hospital, New Orleans, were found to have amebic involvement. Infection with cysts of E. histolytica does not necessarily imply disease from a clinical standpoint. Many patients with infection do not present symptoms. Such persons are carriers or cyst passers. The pathologic change may be minimal. The carrier state may be more important from an epidemiologic point of view than from the clinical standpoint. Reports of "amebic dysentery" are published by the U. S. Department of Commerce (Bureau of Census vital statistics and special reports). In 1945 there were 3,410 cases reported and 190 deaths. Because methods of reporting dysenteries vary among the states, and because many cases undoubtedly are never reported, these figures have limited value. The number of fatalities from complications is not available.

All patients with acute amebic dysentery should be treated with bed rest and appropriate diet (liquid initially and bland later). Use of laxatives and cathartics is inadvisable. Mild and moderately severe cases will respond to such iodine preparations as chiniofon, vioform or diodoquin. Chiniofon (enteric coated) is given orally in a dose of 0.75 to 1 Gm. three times a day for seven days. It may be given as a retention enema (200 cc. of 2 per cent warm water solution daily). Vioform capsules may be given orally, the dosage being 0.25 Gm. three times a day for seven to ten days. Carbarsone is a well established drug given by mouth in doses of 0.25 Gm. twice a day for seven to ten days. Carbarsone and similar drugs containing arsenic are contraindicated in the presence of liver disease and occasionally cause a toxic reaction. In cases with complications such as hepatitis and hepatic abscess emetine hydrochloride 30 mg. subcutaneously twice a day or 60 mg. subcutaneously once a day is effective. It is wise to give it for no longer than one week and certainly it should not be given longer than ten days. An emetine course should not be repeated until at least six weeks have elapsed. Its use should be discontinued at once with the appearance of toxic symptoms, including nausea, vomiting, muscular weakness, neuritis and myocarditis. Electrocardiographic studies before and at intervals during therapy are desirable for early detection of myocardial damage. In an acute infection with severe diarrhea an emetine compound may be useful to control the diarrhea. Chemotherapy and antibiotics are indicated only for the control of secondary infection.

2. Walters and his associates reported in 1944 two cases of amebic hepatic abscess not suspected until perforation occurred, although both patients were in a service hospital for filariasis. Neither patient had diarrhea, weakness or fever before perforation.

3. Incomplete reliance can be placed on the complement fixation test for the diagnosis of amebiasis because the incidence of errors, both positive and negative, is too great. It is not a substitute for a competent stool examination.

4. Authoritative textbooks are Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases; Strong, volume I, published by the Blakiston Company, Philadelphia, 1944; Clinical Parasitology, by Craig and Faust, published by Lea & Febiger, Philadelphia, 1945, and the Etiology, Diagnosis and Treatment of Amebiasis, by Craig, Baltimore, Williams & Wilkins Company, 1944.

5. The symptomatology described is compatible with, but not diagnostic of, amebiasis. The diagnosis would depend on the stool examinations.

THIOCYANATES FOR HYPERTENSION

To the Editor:—What is the present status of the treatment of hypertension with the thiocyanates?

Daniel B. Lynch, M.D., Albany, N. Y.

Answer.—Diametrically opposed views are held as to the advisability of the treatment of hypertension with thiocyanates. Several authorities consider potassium or sodium thiocyanate the most important drug available for the management of hypertension. They believe that when used properly toxic effects may be avoided and that appreciable drops in blood pressure and symptomatic improvement result. On the other hand, many authorities consider the use of the drug irrational and undesirable. They point out that the drug acts solely as a sedative and that equally effective results may be obtained by the use of safer drugs or by other symptomatic measures. In experimental animals thiocyanates fail to reduce the blood pressure. All authorities agree that the use of thiocyanates effectively requires the maintenance of a blood concentration of 8 to 12 mg. per hundred cubic centimeters. Blood levels must be determined to ensure adequate doses and to avoid toxic effects which may at times occur at relatively low blood levels. Patients past the age of 60 do not tolerate the drug well, nor should it be used for patients with a previous history of angina pectoris, congestive heart failure, renal insufficiency or encephalopathy.

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CONTACT DERMATITIS FROM RUBBER ACCELERATOR

To the Editor:—A man aged 25 works in a hybrid seed corn plant. The corn is treated with "Arasan"-Dupont (50 per cent Tetramethyl Thiuramdisulfide). On handling the bags of seeds after the treated corn has been dried he develops a dermatitis of the face and hands and arms which is apparently a result of an allergy to this Arasan dust. The dermatitis is red and scaly, and it causes subjective symptoms of burning and smarting. Can you suggest any type of protective ointment against this substance or a way to desensitize the patient?

J. M. Hennessey, M.D., Manilla, Iowa.

Answer.—Tetramethyl Thiuramdisulfide under the trade name of Tuads has been used as a rubber accelerator for many years and has been reported as a cause of allergic dermatitis in the rubber industry as well as causing dermatitis on the hands of workers wearing rubber gloves which contained it (Schwartz, Louis, and Tulipan, Louis: Occupational Diseases of the Skin, Philadelphia, Lea & Febiger, 1939, p. 375).

Ointments do not rate high as protectives against contact dermatitis, but if it is desired to try a protective ointment against the dust of Arasan the type that leaves a dry, water insoluble film on the skin such as West number 77 might be suggested.

Desensitization against Tuads has not been tried, but if such an experiment is to be inaugurated the agent might be dissolved in ethylalcohol and the procedure begun by subcutaneous injection of a low concentration, i. e. one drop of 1 : 1,000,000 dilution, the dose being increased according to the patient's reaction.

It is believed that protection of the hands and arms with rubber gloves (not containing Tuads) and impervious sleeves, using the protective ointment only on the face and wearing goggles, will give better protection, especially if those exposed take a shower bath after work and change to clean clothes.

PROLONGED AMENORRHEA AND PREGNANCY

To the Editor:—A woman aged 32 had a normal menstrual period at regular intervals until four years ago. Then she stopped menstruating. She never was pregnant. She looked healthy and appeared somewhat younger than her given age. Her height was 63½ inches (160 cm.), her weight 115½ pounds (52 Kg.). The distribution of the body hair appeared perfectly normal. Her breasts were somewhat small and firm. On pressure the breasts excreted a milky, watery fluid, a condition which persisted since the premature menopause mentioned. Pelvic examination revealed a normal cervix, although the vaginal vaults were not deep. The uterus appeared in anteflexion, the total length being not more than 3 cm., with a corpus estimated about 1 cm. long. The adnexa were free. For psychologic reasons I induced a uterine flow with estrogenic substance. I did this repeatedly. However, when I stopped the medication she did not flow any more. The patient is desirous of having a child. Is there any chance of pregnancy? What is the significance of the secretion of the breasts which are free of any tumor formation such as an adenoma? What treatment, if any, is possible?

Ludwig Gruenewald, M.D., Sheboygan, Wis.

ANSWER.—The outlook for a pregnancy in a case like this is not too good. It is possible that in spite of the amenorrhea for four years and the atrophied uterus there is a remote possibility of the occurrence of ovulation and menstruation without any therapy and without apparent reason. However, this should not be counted on. There are two procedures which may yield the desired outcome. One is the use of hormones and the other is x-ray stimulation of the pituitary gland. Glandular treatment should be tried first. The basal metabolic rate should be determined once or more to make sure there is no need for thyroid medication. Most likely the thyroid function of this patient is normal. Therapy then will consist in the administration of a combination of equine and chorionic gonadotropins, the so-called one-two cyclic gonadotropic therapy recommended by Hamblen and Davis (*Am. J. Obst. & Gynec.* **50**:137 [Aug.] 1945). Prior to using this therapy the patient should be skin tested with the equine gonadotropic preparation to rule out possible allergy. If the patient is allergic, this hormone treatment should not be used. Hamblen and Davis give their patients 400 international units of the equine gonadotropic preparation intramuscularly every day for ten days. During each of the next ten days the patients receive 500 international units of chorionic gonadotropin intramuscularly. If bleeding does not follow this treatment, a number of months should be permitted to elapse before it is repeated.

Ostergaard of Copenhagen (quoted by Greenhill, J. P.: Year Book of Obstetrics and Gynecology, Chicago, Year Book Publishers, 1947, pp. 586-587) recommends the following schedule for cases of amenorrhea of long standing in women past 30 years of age: Equine gonadotropin 3,000 international units is given every day for five days and then chorionic gonadotropin 1,500 international units is given every second day three times. The first menstrual period usually appears about two weeks after the first injection of chorionic gonadotropin. Out of 100 women treated in this way about 50 per cent had normal menstruation, about 35 per cent had only one bleeding episode after treatment, and 15 per cent had no bleeding at all. A few women became pregnant.

If endocrine therapy fails, x-ray therapy may be applied to the pituitary gland. Thus far harm has not been reported from this treatment, but in lower animals abnormalities appear in the third and fourth generations following radiation. The treatment is simple.

There is no satisfactory explanation for the discharge from the breasts except perhaps that the prolactin element of the anterior pituitary gland is functioning.

FIBROSITIS

To the Editor:—What is the prognosis of primary periarticular fibrositis, acute and chronic? Does primary chronic periarticular fibrositis produce severe disability when the entire spine, shoulders, knees, buttocks and hands are involved? What is the prognosis of periarticular fibrositis secondary to osteoarthritis where the entire spine is involved? What is the degree of disability produced in this type of case? What is the degree of disability where hands, shoulders, entire spine and knees are involved?

Louis M. Magee, M.D., Natchez, Miss.

ANSWER.—Primary periarticular fibrositis produces articular stiffness and pain which are generally transient and recurrent, not chronic. Even in chronic cases symptoms vary from day to day and from hour to hour, generally being worse after some hours of rest (morning jelling), better after moderate activity, worse after strenuous physical exertion. After the patient "limbers up" in the morning he may be relatively free from symptoms for the rest of the day or until the end of a physically tiring day. Except in special localized forms (for example, capsular fibrositis of the shoulder) there are no objective manifestations of disease: no flexion deformities, muscular atrophy, articular swelling. Stiffness is subjective. Roentgenograms and sedimentation rates are normal.

Primary periarticular fibrositis is a condition of unknown cause apparently unrelated to any other disease. It probably results from some obscure chemical abnormality, not from inflammatory changes in affected periarticular tissues. The prognosis is good: it may last days, weeks or months but usually disappears in time, always without residual damage. Generally it is satisfactorily controlled by reassurance, physical therapy and aspirin.

Since primary periarticular fibrositis rarely affects patients as widely as in the inquirer's illustration and does not produce notable disability, a review of the diagnosis is in order. Many cases called "diffuse fibrositis" are in reality cases of "psychogenic rheumatism" (Hench, P. S., and Boland, E. W.: *Ann. Int. Med.* **24**:808 [May] 1946). Others are not primary fibrositis but represent "secondary fibrositis," the fibrositic component of a mild or impending rheumatoid arthritis. In such cases certain constitutional reactions may be developing (increased sedimentation rate, loss of weight and appetite, secondary anemia) even though roentgenograms are still negative and articular swellings absent. In cases of "secondary fibrositis of rheumatoid arthritis" muscular atrophy and flexion deformities may develop and biopsies of muscles may reveal localized inflammatory foci of considerable diagnostic interest (Freund, H. A.; Stiener, Gabriel; Leichtentritt, Bruno, and Price, A. E.: *Science* **101**:202 [Feb. 23] 1945. Gibson and others *Ann. Rheumatic Dis.* **5**:131 [June] 1946). These foci have not been reported in cases of primary fibrositis or of fibrositis secondary to osteoarthritis.

Periarticular fibrositis secondary to osteoarthritis is common; indeed it has been stated that "senility is synonymous with fibrositis" but it is also, like primary fibrositis, relatively benign. The disability may be mild or moderate but depends more on the associated osteoarthritis than on the accompanying fibrositis. The prognosis depends on the amount and location of the osteoarthritis present. The prognosis in osteoarthritis is much better (as far as progressive and polyarticular disability is concerned) than it is in rheumatoid arthritis.

NEUROFIBROMATOUS TUMORS

To the Editor:—A white man aged 27 has multiple superficial mildly firm tumor masses which are suggestive of neurofibromas or von Recklinghausen's disease. Several of these have been removed while in the armed forces, but others are occurring. The modern surgical textbooks suggest surgery for the masses, which may be painful because of pressure on nerves. Since the surgical therapy is palliative, is some other approach such as vitamin B therapy possible?

O. L. Bettag, M.D., Pontiac, Ill.

ANSWER.—Tumors of neurofibromatosis need be removed only for cosmetic reasons or when they become painful because of pressure on nerves. Malignant changes have occasionally been reported. Surgical removal is the method of choice. There is no evidence to indicate any benefit from vitamin or endocrine therapy.

GLUTAMIC ACID AND MENTAL RETARDATION

To the Editor:—I would appreciate any information about the use of glutamic acid to improve mental development.

Roy M. Greenthal, M.D., Milwaukee.

ANSWER.—Glutamic acid is of unquestionable benefit in some cases of petit mal epilepsy, and if the seizures are accompanied with psychomotor attacks or retardation the mental condition is usually improved also. If grand mal attacks are present, diphenylhydantoin sodium should be given as well as glutamic acid.

In cases of mental retardation without seizures, the results are more questionable, but beneficial effects have been reported. A trial is at least harmless.

Glutamic acid must be given in massive doses, 18 to 24 Gm. a day for an adult and roughly in proportion to weight for children. The good effects, if any, develop rather slowly over several months.

EPITHELIOMA OF FACE

To the Editor:—Can an epithelioma of the face be cured with an electric needle? I have used Marsden's paste; the reactions are severe but the final results have been satisfactory.

F. W. Didier, M.D., Mill Valley, Calif.

ANSWER.—Epithelioma of the face is best treated either by surgical excision or by irradiation. Electrodesiccation may be used in the treatment of hyperkeratoses and as a palliative procedure in extensive carcinoma of the face or in the control of a small recurrence in a previously irradiated area. The effect of Marsden's paste is caustic. The results are unpredictable and unreliable. Its use is not recommended.

RAGWEEDS IN EUROPE

To the Editor:—Perhaps you could furnish me with information as to the prevalence of ragweed in Europe, especially France, Belgium and Switzerland. A patient of mine will make a trip there this summer and requests this information.

Harry H. Lebow, M.D., West Hempstead, L. I., N. Y.

Answer.—Bray has made the statements that "the American ragweeds are absent from the British Isles and Europe" and that "the European hay fever producing flora is essentially different from the American in so far as the Ambrosiaceae and the Artemisia groups of pollens are absent." For all practical purposes of exposure of ragweed sensitive persons these statements are probably true. Actually there is a native species of Ambrosia in the Mediterranean area, though its distribution is too limited to be of any allergic importance. The American ragweeds Ambrosia elatior and Ambrosia trifida have been introduced in various parts of central and northern Europe, particularly Germany and France. Gutmann mentions particularly the harbor cities and certain river ports on the Rhine. He says, however, that the season is too short for maturation of seeds, so that the introductions are not permanent. Various species of Artemisia, such as Artemisia vulgaris and Artemisia absinthium, are native in almost all countries of Europe. Their pollen if abundant enough could cause symptoms in ragweed sensitive persons, but the variable experience of ragweed sensitive Americans in Europe has been entirely satisfactory. It must be concluded that the amounts of any sort of air borne composite pollen in any part of the British Isles and Europe is too small to cause active symptoms.

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AIR TRAVEL FOR INFANTS

To the Editor:—What are the dangers in air travel for infants under 1 year of age? Are any special precautions to be taken when traveling by air?

Robert J. Antos, M.D., Phoenix, Ariz.

Answer.—While there have been rumors that air travel is not well tolerated by infants, this has not been confirmed by investigation. The medical director of the United Airlines reports that in a survey conducted during 1941 and 1942 on every baby flown in the United Mainliners a healthy baby reacts better to flight conditions than most adults. It was stated that babies have frequently been flown with their mothers the moment the latter were released from hospitals following confinement. During the war a large number were flown.

An infant's ears adjust to altitude more easily than an adult's, probably because their eustachian tubes are short and straight.

Airsickness is a rarity. There have been reports of vomiting, but this apparently is due to regurgitation of food when the infant is fed aloft. The gas expansion which takes place at altitude results in a regurgitation unless great care is taken to prevent the infant from swallowing air while being fed.

The medical director of the United Airlines states that statistics and reports confirm his personal observation that there is no danger in air travel for an infant under 1 year of age.

ABORTION AND GERMAN MEASLES

To the Editor:—Is it justifiable to recommend abortion in cases of German measles during pregnancy in order to avoid congenital deaf-mutism, cataract, heart anomalies and mental retardation?

M.D., New York.

[This inquiry was referred to two consultants, whose respective replies follow.]

Answer.—Abortions should not be done because the mother has German measles during pregnancy. There are no adequate statistical studies to justify a positive conclusion that a child will suffer with congenital malformations. Although Swan, Tostevin, Mayo and Black (*M. J. Australia* **1**:409 [May 6] 1944) have indicated that an abortion should be debated and Reese (*Am. J. Ophth.* **27**:483 [May] 1944) also discusses this question, Fox and Bortin (The Journal, March 2, 1946, p. 568) conclude from their survey and Milwaukee Health Department studies that the termination of pregnancy because of rubella is not justified.

Answer.—In De Lee-Greenhill's Textbook of Obstetrics (Philadelphia, W. B. Saunders Company, 1947, p. 431) it is stated that "in 1941 Gregg discovered that most babies born of mothers who had German measles in the early months of pregnancy were born with defects of the eye. Since then there has been ample proof (109 cases in Australia alone up to 1944) to show that when German measles occurs in the first three months of gestation at least 60 to 70 per cent of the babies will show congenital abnormalities such as cataract, cardiac disease, deafmutism, microcephaly, dental defects and glomerular sclerosis. Because of this we believe an abortion is justified if German measles develops in a pregnant woman during the first three months of pregnancy."

In 1944 J. C. Prendergast (*Arch. Ophth.* **35**:49 [Jan.] 1946) questioned 37 ophthalmologists, 24 pediatricians and 32 obstetricians in California to determine the incidence of congenital anomalies in children born to mothers who had rubella in the first three months of pregnancy. A total of 80 cases of cataract, 10 cases of other ocular defects (congenital glaucoma, microphthalmus, pigmentation of the retina, corneal opacities and strabismus), 32 cases of cardiac defects and 10 cases of other congenital anomalies were reported. Some duplication of cases undoubtedly existed, 2 especially in the field of ocular abnormalities. Of a total of 10 cases of rubella in the first three months of pregnancy reported by obstetricians, congenital anomalies resulted in 6 of the offspring. Since not all men who might see congenital defects were reached, figures for the state are necessarily incomplete.

The third series of congenital abnormalities in infants following German measles during pregnancy in Australia was reported by Swan and Tostevin (*M. J. Australia* **33**:645 [May 11] 1946). In addition to the 136 previously studied, the authors report 58 new cases. The authors consider therapeutic abortion entirely justified in any case in which rubella is contracted in the first few months of pregnancy. If the infection occurs shortly before conception there is evidently no need for worry.

The only article which questions the specific connection between German measles and pregnancy is the one by Fox and Bortin (The Journal, March 2, 1946, p. 568). In a series of 11 cases of rubella, of which 9 occurred during the first four months, there was only 1 monstrosity. On the basis of these data the authors feel that consideration of therapeutic abortion following rubella is unwarranted. In commenting on this article J. P. Greenhill (Year Book of Obstetrics, Year Book Publishers, Chicago, 1947, p. 323) says "I am convinced of the connection (rubella in the early months of pregnancy and the occurrence of malformations in the newborn baby) and therefore advocate termination of the pregnancy if the rubella appeared either just before a menstrual period was missed or during the first three months of pregnancy."

CHAULMOOGRA OIL FOR ARTHRITIS

To the Editor:—What is the status of the treatment of arthritis with the use of chaulmoogra oil by mouth? What is the technic of therapy and what relationship, if any, has the age of the patient to this type of therapy?

Harold E. James, M.D., Sanitarium, Calif.

Answer.—Since about 1926 chaulmoogra oil has been occasionally recommended for the treatment of chronic arthritis. McIlhenny, an orthopedic consultant to a leprosarium, made the observation that the "secondary type of infectious arthritis" did not affect leprosy treated by intramuscular injections of chaulmoogra oil. Thereafter he treated 39 patients with rheumatoid arthritis or osteoarthritis. Presumably improvement frequently occurred; some patients supposedly became "symptom free" within eight weeks.

Since then about five other reports have appeared dealing with the treatment of various types of arthritis in about 350 cases. In general the terminology used was vague: although some cases were labeled "atrophic arthritis" or "hypertrophic arthritis" (at times erroneously), other cases were labeled "chronic arthritis" or just "arthritis." The results were uncritically and enthusiastically appraised; the effects were sometimes "truly astonishing," "symptoms disappeared in almost all cases" and so forth. Little or no statistical or clinical evidence was given to support these claims.

Focal and general reactions to the intramuscular injections were common and included increased articular pains, malaise, fever, headaches, gastrointestinal symptoms, urticaria and others. Injections were often painful, and sterile abscesses developed in 5 to 8 per cent of cases. Although probably somewhat analogous to reactions to foreign protein, those to chaulmoogra oil appear to be distinctly less preferable than reactions to triple typhoid vaccine, and the results are no better.

The oral use of chaulmoogra oil was regarded as ineffective by Hebert (1933) and by Smith, Blocker and Tumen (1938), but a later worker, Burnett (1941), concluded that it was useful: of 100 cases of chronic arthritis (types?) "improvement" was noted in 75 per cent. Even so, gastrointestinal symptoms often necessitated cessation of treatment.

Such treatment is not recommended. As Dr. Joseph Miller of Chicago once put it, "The inevitable 75 per of arthri are in time 'improved' (whatever that means) by almost anything or almost nothing"; such is the natural variability and course of chronic arthritis of the rheumatoid or osteoarthritic types. Only six proponents of this type of treatment have appeared in twenty years, the last indexed report having appeared more than five years ago. The reports to date have been enthusiastic and likewise unimpressive. This treatment has not obtained the approval of a single nationally known rheumatologist. One writer considered it significant that the two earliest advocates of this treatment published "preliminary reports" but did not see fit to present later reports.

URTICARIA AND Rh NEGATIVE BLOOD

To the Editor:—A woman aged 31 has had three pregnancies. The first was successful, and the child is living and well at the age of 5 years. The second resulted in a miscarriage at some stage unknown to me. The third was a twin pregnancy and during this the mother was found to be Rh negative. The obstetrician, with considerable difficulty, carried her through to practically full term and the babies are now some 3 months old and doing well. Since the pregnancies the mother has had a great deal of disturbance on account of urticaria. She has a hemoglobin of 13.5 Gm. per hundred cubic centimeters, 4,450,000 red blood cells and 9,500 leukocytes, with lymphocytes of 24 per cent which are small, neutrophils 70 per cent with 67 segmented, endothelials 3 per cent, eosinophils 2 per cent and basophils 1 per cent. There is no disturbance in shape or size of erythrocytes. The blood sugar is 105 mg., nonprotein nitrogen 19 mg. per hundred cubic centimeters, uric acid 3.0 mg. per hundred cubic centimeters, creatinine 0.8 per cent, cholesterol 150 mg. per hundred cubic centimeters and coagulation time less than 1 minute. There is normal urine, good concentration both fasting and postprandial, with specific gravity ranging from 1.024 to 1.026, a slight reduction of sugar in each specimen and no acetone, a slight trace of albumin in each specimen and considerable urobilinogen in each specimen. The sediment showed a few erythrocytes and a few leukocytes per high power field but no casts. Feces are not remarkable. I assume that during the pregnancy she has become sensitized and that I am dealing with some sort of allergy manifested in an Rh negative woman. Can you suggest any type of treatment?

Francis T. Jantzen, M.D., Boston.

Answer.—There is no evidence that any of this patient's children had erythroblastosis fetalis. An Rh negative mother giving birth to a child with erythroblastosis would have an increase in anti-Rh agglutinins and therefore might have a severe reaction from the transfusion of Rh positive blood. There is no known sensitization in such a patient that might be associated with urticaria.

A patient like this should have a glucose tolerance test to rule out a mild diabetes. The management of the urticaria is the same as for any patient. Benadryl and pyribenzamine have proved beneficial in many such cases.

ROCKY MOUNTAIN SPOTTED FEVER

To the Editor:—In the discussion of Rocky Mountain spotted fever mention is seldom made of the long lasting sequelae. Wolbach in Cecil's "Textbook of Medicine" mentions deafness, mental confusion and slurred speech as sequelae which last only a few weeks. Is there any record of serious neurologic sequelae which persist over a period of years? Also is Michigan among the states mentioned as being a state in which the disease has been contracted? I know that the disease has occurred here, but the patients were usually people who may have contracted it elsewhere and were traveling through Michigan. Thank you for any assistance you may offer.

Louis Berlin, M.D., Ann Arbor, Mich.

Answer.—Long lasting sequelae in Rocky Mountain spotted fever are quite rare, although there are a few reports in the literature which indicate that neurologic sequelae have occurred. During the acute stage of the illness it is not unusual to observe diminution in hearing, some diplopia and mental confusion. These conditions, however, usually clear up rapidly in convalescence.

The changes caused by the disease, which primarily consist of thrombonecrosis of the small arterioles and capillaries occurring commonly in the skin, heart, kidney and brain, explain neurologic symptoms and signs.

Several investigators who have seen many cases of spotted fever have remarked that they have never seen any permanent sequelae whatever. One of them has stated that he did see a case of encephalitis following Rocky Mountain spotted fever in a 6 year old girl which now has been followed up for five years. The encephalitis entirely disappeared within six weeks after the acute illness, and no residual has appeared to date.

Rocky Mountain spotted fever has been reported in forty-two of the forty-eight states up to the present time. Michigan is one of the states which has not as yet reported a case of Rocky Mountain spotted fever as being contracted within the confines of that state. Several cases have been reported from Michigan, but they were contracted elsewhere.

RABIES AND COYOTES

To the Editor:—I have recently been asked for an opinion concerning the prophylactic use, in anticipation of being bitten, of the Pasteur antirabic treatment. The person who is interested is engaged in the trapping and extermination of coyotes and in the course of his activities is frequently bitten by these animals. There is, of course, no practical way in which he can capture them and keep them under observation, and he has no way to know whether there is any likelihood of any given animal being infected. Would it be effective and reasonably safe to give him the treatment before he begins his summer's work?

M.D., Colorado.

Answer.—In view of the success of antirabic treatment by vaccination after the bite by a rabid animal, it can safely be concluded that vaccination against rabies before the bite would be "effective and reasonably safe." But how long the prevention would last after the preventive treatment is not known. Repeated treatments might be followed by undesirable sensitization. After all the best and safest way to escape rabies is effective mechanical protection against being bitten or otherwise infected by a rabid animal.

VACCINATION

To the Editor:—I have a child patient whose mother states she was vaccinated twice with cowpox. The first time the child became very ill and the second time almost died, being unconscious for three days. Neither of these attempts at vaccination was successful. What can be done in this case? The child will soon be of school age and vaccination will be required.

William B. Barr, M.D., Allentown, Pa.

Answer.—This case is extremely unusual. Is there any proper reason for believing that the mother's statements require verification?

Assuming that the child is hypersensitive to cowpox vaccine, it would be advisable to obtain vaccine which has been developed in the chick embryo? With the latter material, using a 1:10 dilution in isotonic solution of sodium chloride, a sensitivity test may be made by means of multiple pressure on a clean area of the skin. If there is a local reaction it should result in a successful vaccination. If there is no reaction, vaccination with the undiluted chick embryo vaccine should be attempted. Employ the multiple pressure method. Do not penetrate the skin with the needle. Hold the needle parallel with the skin surface.

FREQUENCY OF MISCARRIAGE IN FIRST PREGNANCY

To the Editor:—What is the overall percentage of women who lose the first pregnancy by miscarriage or abortion from all causes?

J. Joseph Klar, M.D., Springfield, Mass.

Answer.—An answer to this query may be found in the report by Hudson and Rucker (The Journal, Oct. 20, 1945, p. 542), who studied the histories of their last thousand pregnant patients for the termination of the pregnancy. Of the 480 women in this series who were pregnant for the first time, 49 aborted spontaneously. However, as only 10.2 per cent of the primigravidas aborted spontaneously as compared with 9.4 per cent of the whole series, this group does not seem to be important numerically.

ROUTE FOR ADMINISTRATION OF INFLUENZA VACCINE

To the Editor:—Please advise whether there is any great advantage in giving the influenza vaccine intradermally over the subcutaneous method. What is the likelihood of reactions by both methods, and which method should be used for mass immunization?

William A. Doebele, M.D., Huntingdon, Pa.

Answer.—There have not been published data to date of sufficient scope to establish comparative values of subcutaneous or intracutaneous inoculation. The great bulk of data have been obtained with subcutaneous inoculations.

REFRACTORY PRURITUS

To the Editor:—In Queries and Minor Notes I have read replies to queries with regard to the treatment of generalized pruritus without obvious skin lesions. After suggesting several measures that I believe will prove therapeutically ineffective, it is suggested, as a last resort, that the services of a psychiatrist be sought. After the latter has failed, as I believe he will, I think the patient might be referred to one of the older general practitioners. In the last five years I have seen 4 such cases of pruritus. Three have been permanently cured by intravenous calcium injections with advice as to diet high in calcium content. In 1 case the treatment has had to be repeated. I believe any of the calcium preparations for intravenous use will suffice: gluconate, levulinate or neo-cal-glucon. The injection should be given every second day until six doses are given.

T. J. Brennan, M.D., San Francisco.

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MORRIS FISHBEIN, M.D.

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JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, MAY—AUGUST 1947

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of The Journal during the past four months. Any of the journals, except those starred, will be lent by The Journal to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1936. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

Acta chirurgica Scandinavica. Stockholm.
Acta clinica belgica. Brussels.
Acta medica orientalia. Jerusalem.
Acta medica scandinavica. Stockholm.
Acta ophthalmologica. Copenhagen.
Acta orthopaedica scandinavica. Copenhagen.
Acta paediatrica. Stockholm.
Acta radiologica. Stockholm.
American Heart Journal. St Louis.
American Journal of Digestive Diseases. Fort Wayne, Ind.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia.
American Journal of Medicine. New York.
American Journal of Obstetrics and Gynecology. St. Louis.
American Journal of Ophthalmology. Cincinnati.
American Journal of Orthodontics and Oral Surgery. St. Louis.
American Journal of Orthopsychiatry. New York.
American Journal of Pathology Ann Arbor, Mich.
American Journal of Physiology. Baltimore.
American Journal of Psychiatry. New York.
American Journal of Public Health, New York.
American Journal of Roentgenol. and Radium Therapy. Springfield. Ill.
American Journal of Surgery. New York.
American Journal of Syphilis, Gonor. and Venereal Diseases. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Practitioner. Philadelphia.
American Review of Soviet Medicine. New York.
American Review of Tuberculosis. New York.
Anesthesiology. New York.
Annales d'oto-laryngologie. Paris.
Annales paediatrici. Basel.
Annals of Allergy. Minneapolis.
Annals of Internal Medicine. Lancaster, Pa.
Annals of Otology Rhinology and Laryngology. St. Louis.
Annals of the Rheumatic Diseases. London.
Annals of Surgery. Philadelphia.
Annals of Tropical Medicine. Liverpool.
*Archives of Dermatology and Syphilology. A. M. A., Chicago.
Archives of Disease in Childhood. London.
*Archives of Internal Medicine. A. M. A., Chicago.
*Archives of Neurology and Psychiatry. A. M. A., Chicago.
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*Archives of Pathology. A. M. A., Chicago.
Archives of Physical Medicine. Chicago.
*Archives of Surgery. A. M. A., Chicago.
Archivio italiano delle malattie dell'apparato digerente. Bologna.
Archivos del Instituto de cardiología de México, Mexico, D. F.
Archivos uruguayos de medicina, cirugía y especialidades. Montevideo.
Arizona Medicine. Phoenix
Australian Journal Experimental Biology and Medical Science. Adelaide.
Australian and New Zealand Journal of Surgery. Sydney.
Belgisch Tijdschrift voor Geneeskunde. Louvain.
Bibliotek for Laeger. Copenhagen.
Biochemical Journal. London.
Blood. New York.
Boletín de la Sociedad de cirugía de Chile. Santiago.
Brain. London.
British Heart Journal. London.
British Journal of Dermatology and Syphilis. London.
British Journal of Experimental Pathology. London.
British Journal of Industrial Medicine. London.
British Journal of Ophthalmology. London.
British Journal of Radiology London.
British Journal of Surgery. Bristol.
British Journal of Tuberculosis. London.
British Journal of Urology. London.
British Medical Journal. London.
Bruxelles-médical. Brussels.
Bulletin of the Johns Hopkins Hospital. Baltimore.
Bulletin of the New York Academy of Medicine. New York.
Bulletin of the U. S. Army Medical Department. Washington, D. C.
California Medicine. San Francisco.
Canadian Journal Public Health. Toronto.
Canadian Medical Association Journal Montreal.
Cancer Research. Baltimore.
Cardiologia. Basel.
Cincinnati Journal of Medicine. Cincinnati.
Connecticut State Medical Journal. Hartford.
Delaware State Medical Journal Wilmington
Deutsche medizinische Wochenschrift. Stuttgart.
Diseases of Chest. Chicago
Diseases of Nervous System. Chicago.
Edinburgh Medical Journal.
Endocrinology. Springfield, Ill.
Gastroenterology. Baltimore.
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Glasgow Medical Journal.
Gynaecologia. Basel.
Hawaii Medical Journal, Honolulu.
Helvetica medica acta. Basel.
Hoja tisiológica. Montevideo.
Hospital. Rio de Janeiro.
Illinois Medical Journal. Chicago.
Indian Journal of Medical Research. Calcutta.
Indian Medical Gazette. Calcutta.
Industrial Medicine. Chicago.
Journal of Allergy. St. Louis.
Journal of the Arkansas Medical Society. Fort Smith.
Journal of Aviation Medicine. St. Paul.
Journal of Bacteriology. Baltimore.
Journal of Bone and Joint Surgery. Boston.
Journal of Clinical Endocrinology. Springfield, Ill.
Journal of Clinical Investigation. Boston.
Journal of Endocrinology. London.
Journal of Experimental Medicine. New York.
Journal of the Florida Medical Association. Jacksonville.
Journal of Gerontology. Springfield, Ill.
Journal of Hygiene. London.
Journal of Immunology. Baltimore.
Journal of the Indiana State Medical Association. Indianapolis.
Journal of Industrial Hygiene and Toxicology. Baltimore.
Journal of Infectious Diseases. Chicago.
Journal International de Chirurgie. Brussels.
Journal of International College of Surgeons. Chicago.
Journal of Investigative Dermatology. Baltimore.
Journal of the Iowa State Medical Society. Des Moines.
Journal of the Kansas Medical Society. Topeka.
Journal of Laboratory and Clinical Medicine. St. Louis.
Journal of the Maine Medical Association. Portland.
Journal of the Medical Association of the State of Alabama. Montgomery.
Journal of the Medical Association of Georgia. Atlanta.
Journal of the Medical Society of New Jersey. Trenton.
Journal of Mental Science. London.
Journal of the Michigan State Medical Society. Lansing.
Journal of the Missouri State Medical Association. St. Louis.
Journal of the Mount Sinai Hospital. New York.
Journal of the National Cancer Institute. Washington, D. C.
Journal National Malaria Society, Columbia, S. C.
Journal of Nervous and Mental Disease. New York.
Journal of Neurology, Neurosurgery and Psychiatry. London.
Journal of Neuropathology and Experimental Neurology Baltimore.
Journal of Neurophysiology. Springfield, Ill.
Journal of Neurosurgery. Springfield, Ill.
Journal of Nutrition. Philadelphia.
Journal of Obstetrics and Gynaecology of the British Empire. Manchester.
Journal of the Oklahoma State Medical Association. Oklahoma City.
Journal of Pathology and Bacteriology. Edinburgh.
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Journal of Pharmacology and Experimental Therapeutics, Baltimore.
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Journal of Physiology. Cambridge
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Journal of Urology. Baltimore.
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Kentucky Medical Journal. Bowling Green.
Lancet. London.
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Maandschrift voor Kindergeneeskunde. Leyden.
Medical Annals of the District of Columbia. Washington.
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Medicina, cirurgia, farmacia. Rio de Janeiro.
Medicina colonial. Madrid.

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Medicina Mexico, D F.
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Monatsschrift fur Psychiatrie und Neurologie Basel
Nebraska State Medical Journal Lincoln
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Wiener medizinische Wochenschrift Vienna.
Wisconsin Medical Journal Madison

SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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Am —American
A —Association
Coll —College
Commn —Commission
Comm —Committee
Conf —Conference
Cong —Congress
Dist —District
Div —Division
Found —Foundation
Hosp —Hospital
Indust —Industrial
Inst —Institute
Internat —International
M —Medical
Med —Medicine
Nat —National
Pharm —Pharmaceutical
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Soc —Society
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